South Pacific bulletin

APRIL, 1961

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The South Pacific Commission

The South Pacific Commission is an advisory and consultative body set up in 1947 by the six Governments responsible for the administration of island territories in the South Pacific region (Australia, France, the Netherlands, New Zealand, the United Kingdom and the United States of America).

The Commission's purpose is to advise the participating Governments on ways of improving the well-being of the people of the Pacific island territories. It is concerned with health, economic and social matters. Its headquarters are at Nouméa, New Caledonia.

The Commission consists of not more than twelve Commissioners, two from each Government. It normally holds one Session each year. There are two auxiliary bodies, the Research Council and the South Pacific Conference.

There is a Research Council meeting once a year. This may be either a meeting of the full Council, or of one or other of its three main sections, specialising in the fields of health, economic development and social development. Members of the Research Council are appointed by the Commission. They are selected for their special knowledge of the questions with which the Commission is concerned, and the problems of the territories in these fields. The chief function of the Research Council is to advise the Commission on what investigations are necessary. Arrangements to carry out those that are approved are the responsibility of the Secretary-General and other principal officers.

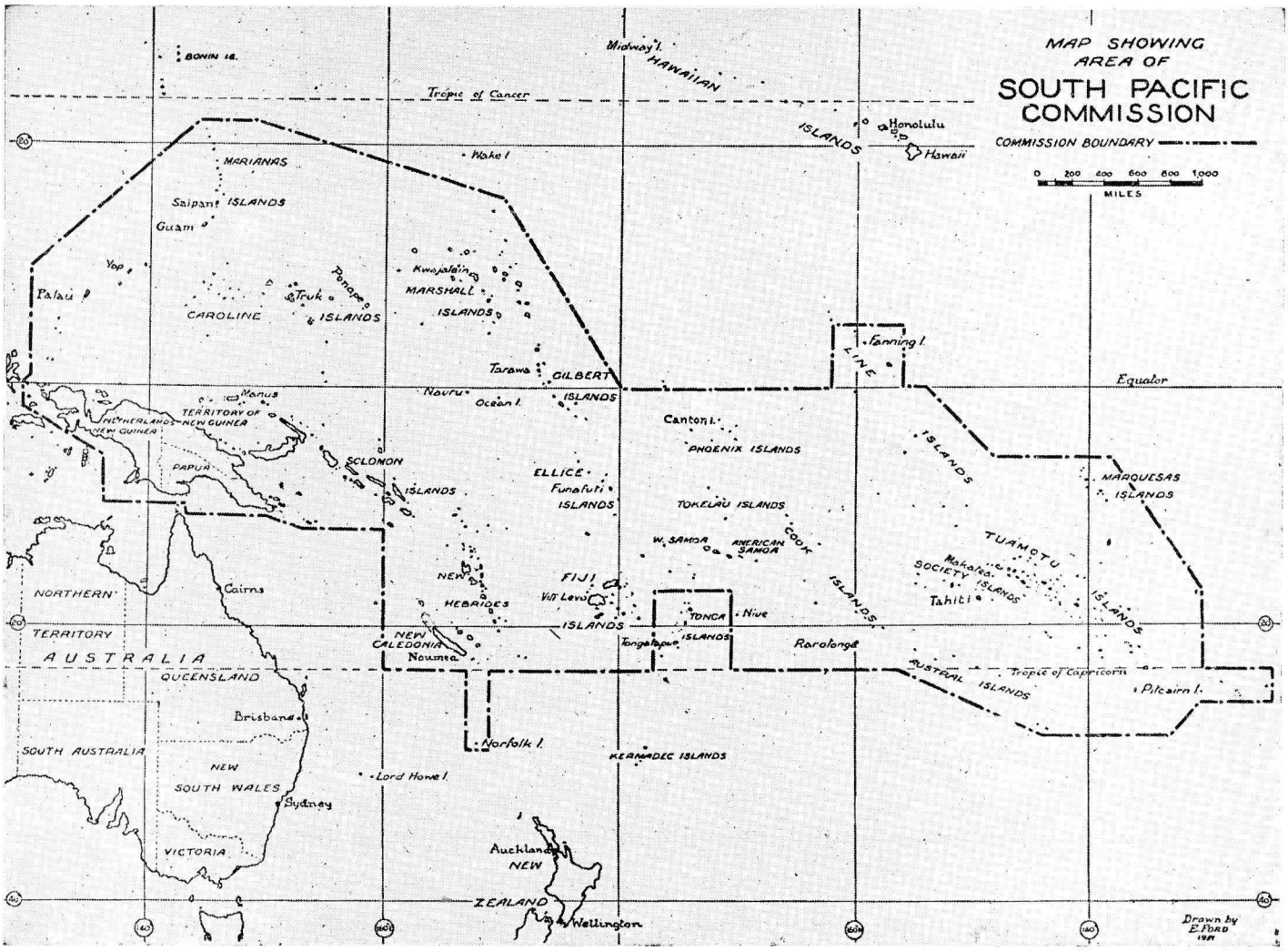
The South Pacific Conference, which meets at intervals not exceeding three years, consists of delegates from the local inhabitants of the territories, who may be accompanied by advisers. The first Conference was held in Fiji in April 1950, and was attended by delegates from fifteen territories and from the Kingdom of Tonga. The second Conference was held at Commission headquarters in April 1953. The third Conference was held in Fiji in April-May 1956, and the fourth Conference in New Britain in April-May 1959.

The principal officers of the Commission are: Secretary-General, Mr. T. R. Smith; Executive Officer for Social Development, Dr. Richard Seddon; Executive Officer for Economic Development, Dr. Jacques Barrau; Acting Executive Officer for Health, Dr. W. Norman-Taylor. The powers and functions of the Deputy Chairman, Research Council, are exercised by the Secretary-General.

Further particulars of the Commission's activities may be obtained from the Secretary-General, Nouméa, New Caledonia.

FRONT COVER PHOTOGRAPH

Assistants at the Keravat Agricultural Experiment Station near Rabaul, New Britain, breaking ripe cocoa pods and extracting the beans. The pods are gathered for opening at central points in the cocoa stand, and the beans are then transported to the fermentary for fermenting and drying. (See article, "Some Practical Pointers On The Harvesting Of Cocoa", on page 35.)



SOUTH PACIFIC BULLETIN

VOL. 11. No. 2 APRIL, 1961

CONTENTS

EDITOR: *A. E. Read, B.Sc.*

THE SOUTH PACIFIC BULLETIN, first published in January, 1951, features articles on selected activities in the Commission's three main fields of operation: economic development, health and social development. Articles are also contributed by specialists working in these and related fields, in the territories within the Commission area.

THE BULLETIN is given selective world distribution to people and institutions in widely differing fields sharing a common interest in the purposes and work of the Commission. It is published in two editions, English and French.

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ALL OTHER ENQUIRIES relating to the SOUTH PACIFIC BULLETIN should be directed to: The Editor, South Pacific Commission, Nouméa, New Caledonia.

THE COMMISSION does not accept responsibility for statements made in contributed articles.

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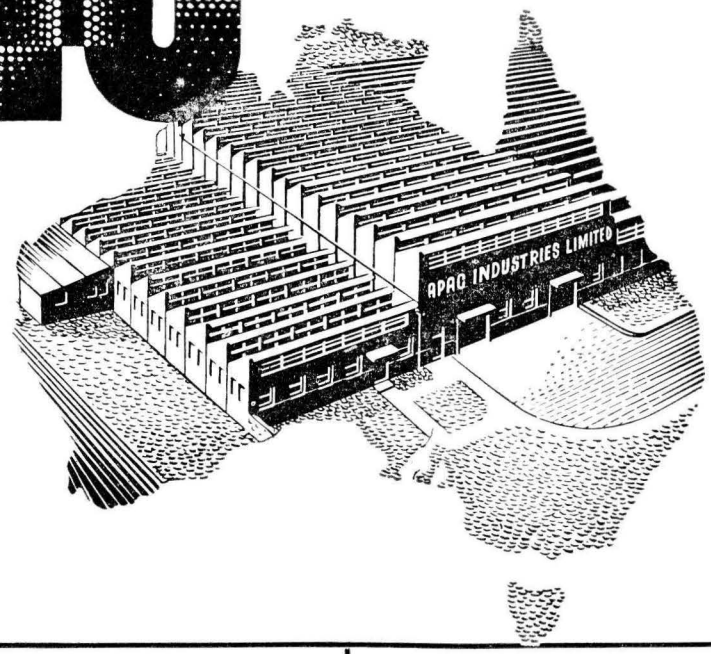

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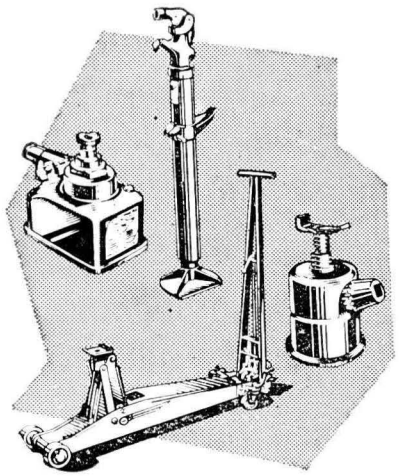

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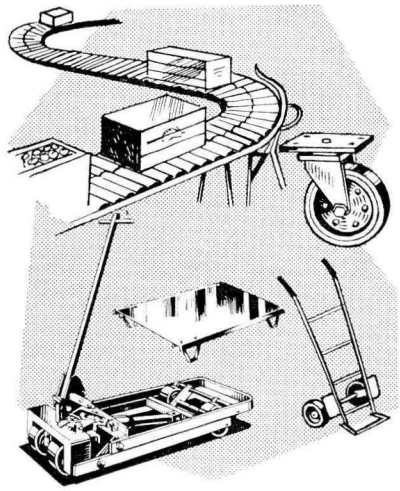

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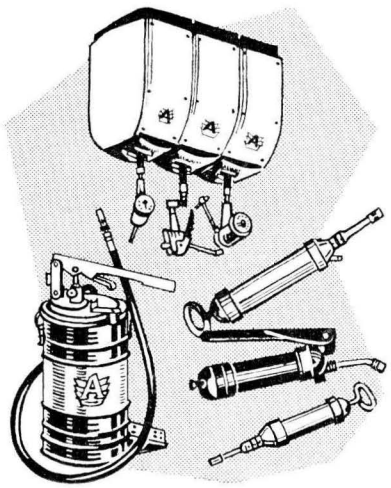

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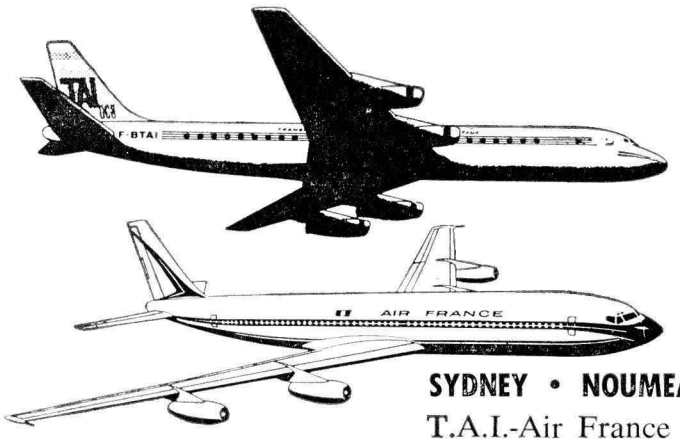

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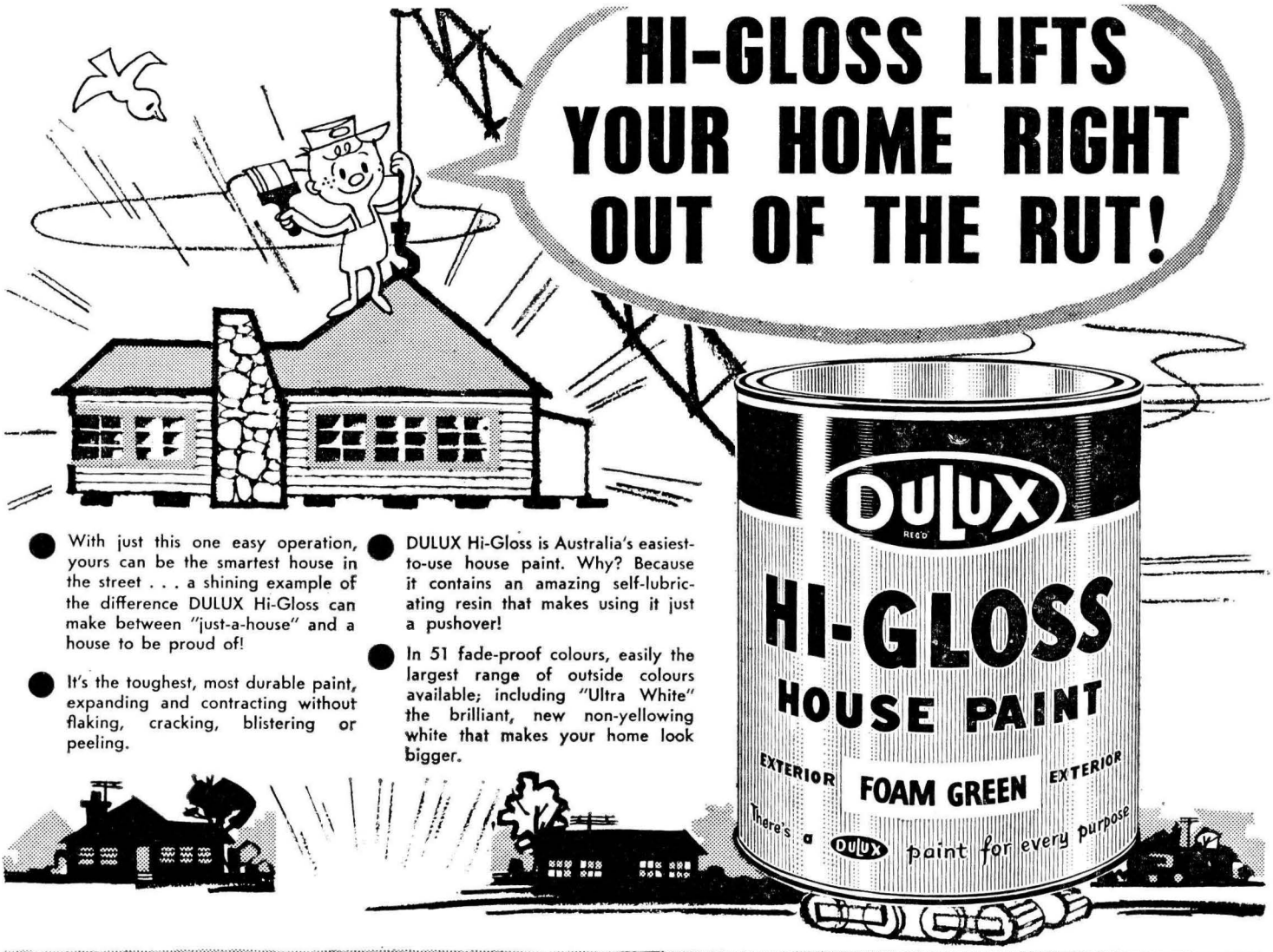

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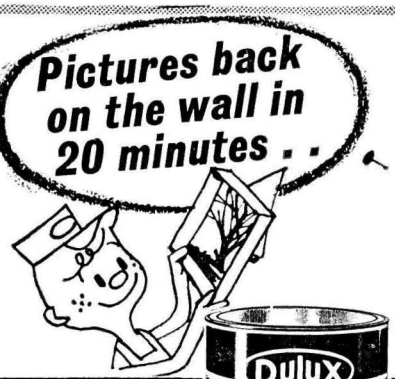

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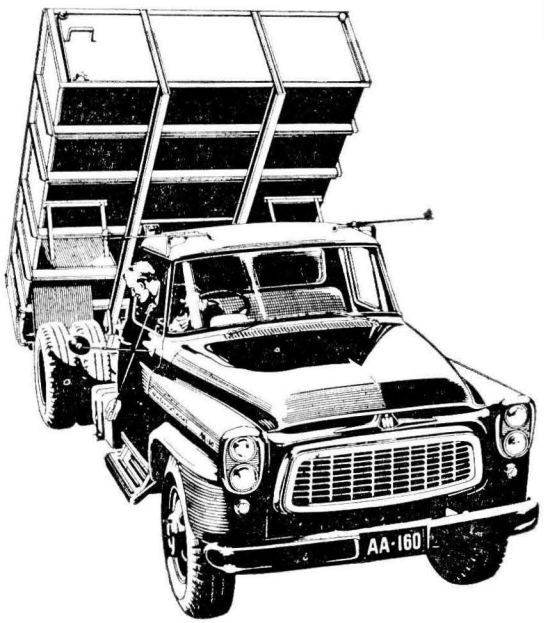

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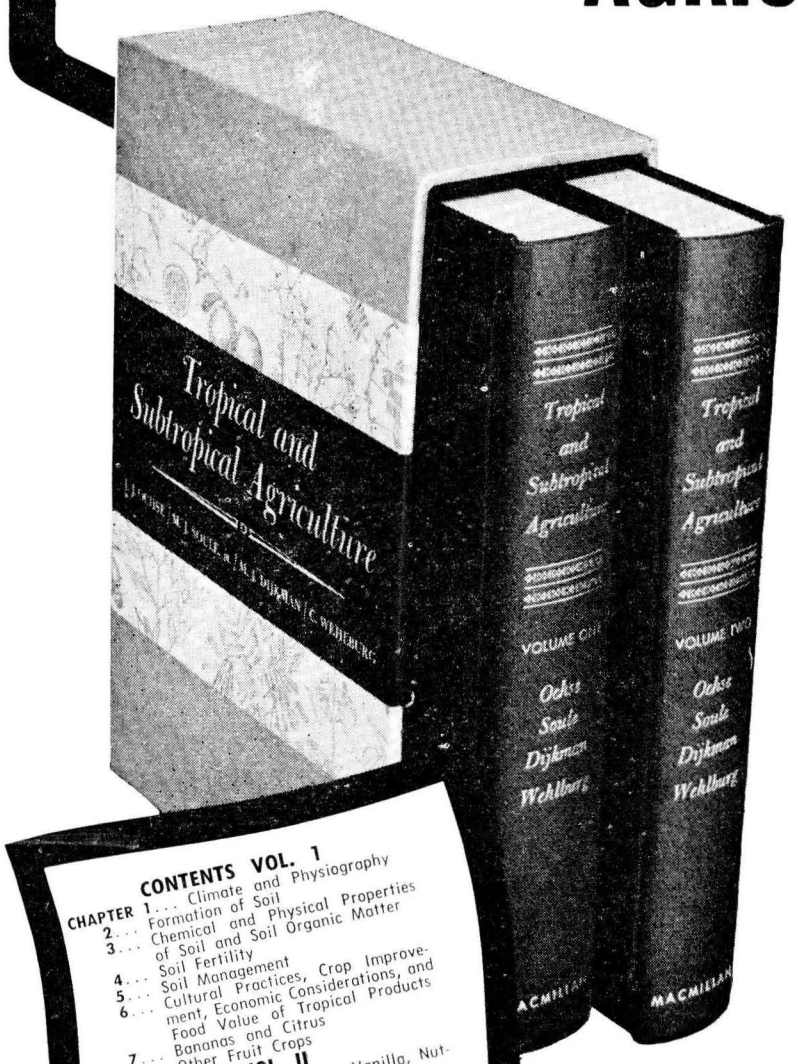

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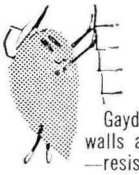

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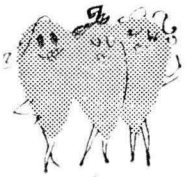

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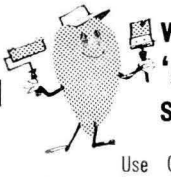

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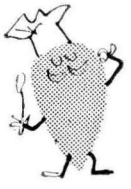

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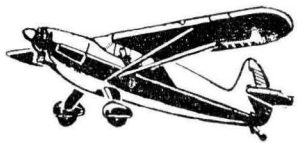

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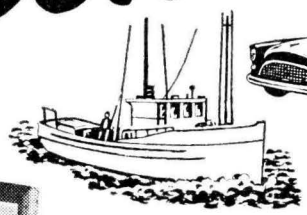

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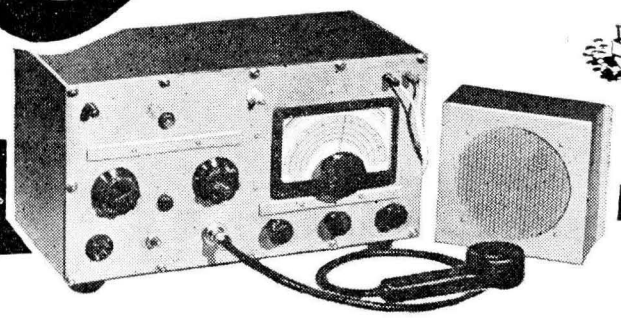

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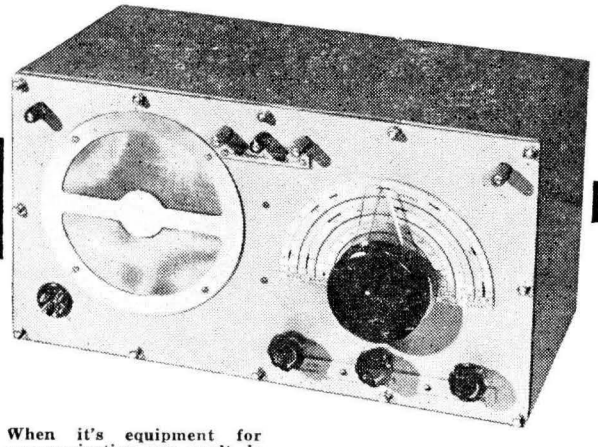

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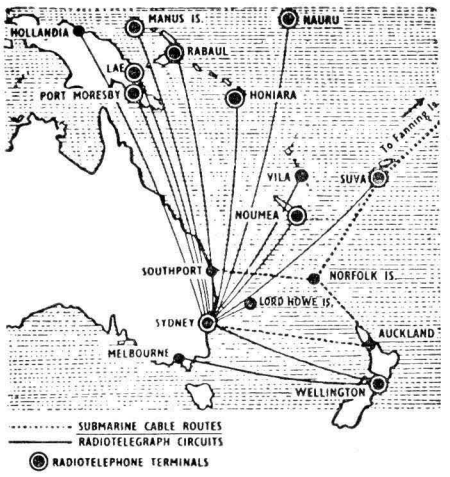

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AUSTRALIA

There is no limit to the patterns and designs. The small chisels shown are made from a variety of warding files.

Island Handcrafts

Shell Polishing And Carving

Using power tools improvised from scrap to polish and carve pearlshell into curios, ornaments, and costume jewellery, the author built up within a year a thriving business in gifts and island souvenirs.

By RONALD POWELL

IN many islands of the Pacific the change from a subsistence to a cash economy is taking place slowly. Few people realize what an involved and complicated process this demands. A totally new way of thinking and an understanding of the value of "time" is needed, which is a slow and sometimes painful process. Where there is a reasonable amount of ready capital available for investment and some technical competence, there is no doubt that the small power tools which are manufactured for the homecraftsman in England and America today would help make the change quicker and easier.

In so many islands that first, almost insuperable difficulty of buying the simplest machinery keeps craftwork at the very low level of hand production. Although some interest has been shown by many Pacific administrations in developing the native craft of shell and wood carving, any progress made is rarely permanent. The reason many attempts fail is that so much work goes into the preparation of the material that the labour of making even the simplest of objects is often hardly worth the effort, when other employment for money is offering. The weaving of hats, mats and baskets by hand, and the carving of artifacts from native timbers, seldom return as much as the basic wage in most territories.

In 1943 I faced this problem. In common with many other people I had lost almost everything I possessed in a hurricane, and had only the clothes I stood up in, plus a pair of rough sandals made from a sundried pigskin. After living outdoors for so long in the atolls, office work did not appeal to me, and I wanted a job where I could be as completely independent as one can ever be. Making wooden artifacts and curios from local materials seemed to offer a possible solution to my immediate problem of earning some money to pay the grocery bills.

It did not take me long to realize that the return for the effort of sawing timber by hand, and of polishing shells by rubbing them on a brick, was never going to return me enough to support a growing family. Buying power tools was out of the question. While improvising them seemed virtually impossible on an island that did not possess a town rubbish heap, I felt it worth while to make the attempt.

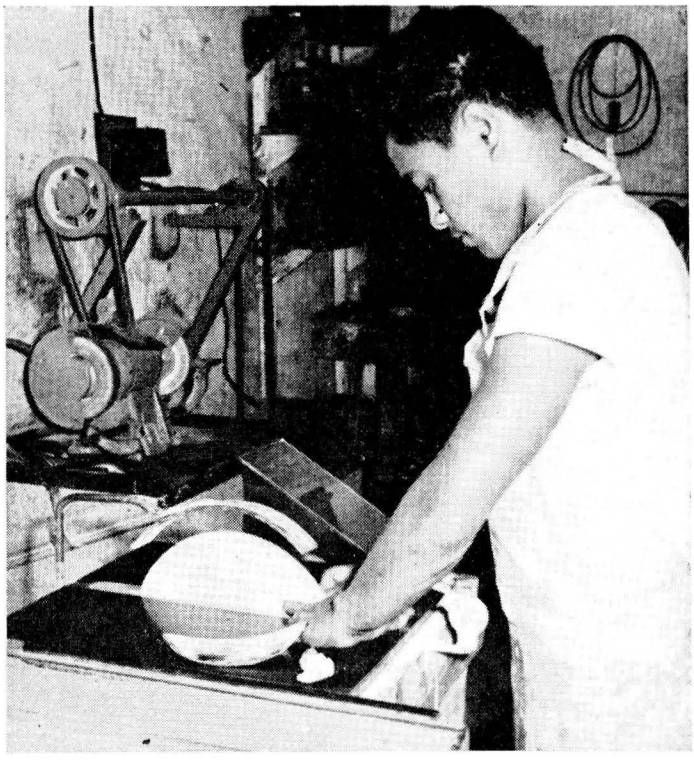
It would be a long story to describe the linking up of old Ford pistons, steering column, and sewing machine parts, by belt to a rattletrap hopper-cooled engine. The effort soon proved worth while when production jumped a thousand per cent from the hand labour days, and it was not long before the obvious value of power tools allowed me to change from the business end of a pit saw to a primitive power workshop.

By the end of the first year the demand for woodwork and curios was still in excess of the supply, and what had started as an effort to earn money to pay the immediate grocery bills had turned into a business that had an obvious future beyond my former expectations.

Permanent Demand For Gifts

Every community needs an endless supply of gifts which are typical of the islands. Wedding presents, presentations to people leaving the islands, birthday parties, the never-ending procession of V.I.P.'s visiting the islands—all result in a steady demand for gifts. And where steamships or aircraft bring tourists, this demand can seldom be met.

Most island reefs have a variety of shells which have a beautiful pearl-like lining. Careful grinding down of the bark brings out some quite surprising changes of colour. There are always the purists who feel that to polish a shell is as gilding a lily, but few people will deny that pearl shell is an excellent material for carving. There are no limits to the possible designs and decorations,



Above: The rough bark is removed on a silicon carbide grinding wheel. Right: The shell is cut on an abrasive cutting wheel which is $\frac{1}{8}$" thick.

and to complete one is but to suggest an idea for another, different and better.

Basic Tools And Techniques

The brief description below will give some idea of this fascinating craft. Anyone starting will find that most of the companies making small power tools and supplying abrasives are generally very helpful with constructive suggestions for doing work quicker, better, and easier.

Electric power of course opens up all sorts of lines of development where it is cheap enough, but there are few islands left today where gasoline or dieseline is not available, and a small motor bought second-hand will often run long enough for the owner to earn enough to buy a better one. Many of the "homecraftsman" type of tools offered at a competitive price are not designed for long running or heavy cutting; the best is always cheapest in the end.

For anyone possessing a few hand tools to begin with, some patience and the opportunity to add the simplest of power grinders and polishing heads, this work does offer a chance of independence, and can be the basis of an industry well suited to the temperament of most islanders. Where that rather rare combination of artist, craftsman and businessman exists, the results could be impressive.

Grinding and polishing any form of shell or stone generally involves using a power grinder with a coarse rough wheel to cut off the surplus material, or bark, from the back of the shell, followed by progressively finer stages of grinding or sanding down to produce a finer polish.

A simple double-ended grinding spindle as shown has a shaft that can vary from about 5/8" to 1¼" in diameter, on which can be held a variety of grinding wheels, sanding pads and polishing buffs which are quickly interchangeable.

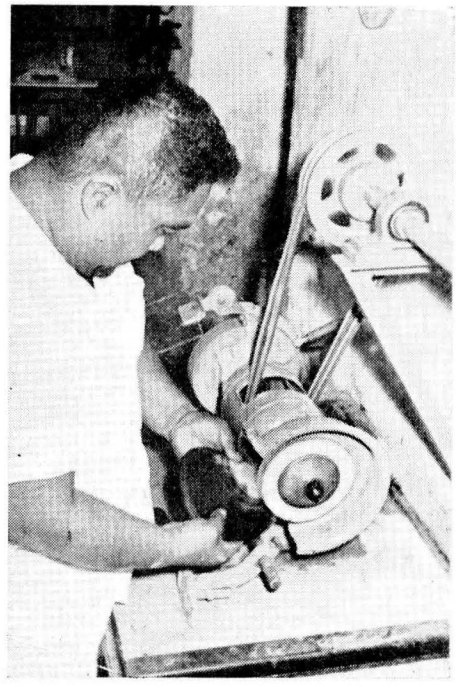
Coarse silicon carbide wheels which run at the maker's recommended speeds are not very expensive, and in a few minutes remove the rough bark from a pearl shell which might take the operator a full day of rubbing on a brick while sitting in a lagoon.

Dust is unpleasant, and this can be overcome by the liberal use of water run onto the wheel, or by working in a strong breeze. This coarse grinding leaves deep scratches which must next be removed by a sheet of silicon carbide cloth mounted on the side of a soft rubber pad or a cotton buff. Where the speed of the spindle is not controllable the cotton buff will stand a higher speed than the rubber pad, but the soft pad allows uneven shapes to be sanded easily.

The abrasive disc is a 1/4" larger than the pad. It does not last long in use, but does more work in a few minutes than one can do in hours by hand. When the disc has removed all the scratches that are easily seen, the shell will have a dull, satin-like finish. A coarse rope buff charged with a coarse abrasive paste will remove scratches until the polish begins to appear.

If the surface is now examined under a hand lens, the finer scratches will still show. These can be removed with a finer paste on another buff.

Hand rubbing with silicon carbide paper No. 400 grit, kept wet, will take



For the final polishing, grinding wheels are changed for a variety of cotton buffs.

most of these final scratches out, and a very fine polishing powder or liquid will bring the surface up to a finish like plate glass, where all the colours of the shell change as the light varies.

Some of these steps can be left out, but, if they are, the final polish will not be as good, while a little extra time spent and an intermediate grade of abrasive will always give a finish which, in the final polish, makes the shell appear almost as though wet.

These cotton buffing wheels can be bought ready-made from specially-woven fabric, but where expense must be considered they can be made from pieces of cotton cloth cut by scissors and mounted between two discs of hardboard. For intermittent use, these cotton cloth discs last quite a long time. Where coarse and fine pastes are used, separate buffs must be used, as the abrasive grit is impossible to remove from the cloth and is carried over into the final polish with disastrous results.

Making Ornaments From Shell

When brooches, ear-rings and pendants are to be made from shell, or where local fishermen need pearl shell hooks, the rough shell can be cut with either a hacksaw or a metal cutting bandsaw blade, or a jeweller's saw, and filed to shape. Steel saws and files do not last long on shell, which dulls the best of tools in a few minutes' use.

A better method is to use a thin abrasive disc cutting wheel. These wheels are made in a variety of thicknesses, diameters and grits. They need to turn at the maker's recommended speeds, and they must be driven with enough power to ensure that they do not slow down while cutting, or they are dangerous.

Guards must always be in place or a serious accident may happen. With all power tools it is never safe to work with interested onlookers passing comments, or at times when one's attention may be distracted in other ways. Otherwise missing fingers are inevitable.

Patterns for costume jewellery can be marked out on the nacre of the shell with pencil and the piece sliced out with a few straight cuts. The profile can then be ground to shape by using a grinding wheel which has been cut to a sharp "V". This is quite easy to do with a grinding wheel burr—which is cheap to buy or make from ordinary washers—or better still with a diamond dresser—which is expensive.

This "V"-shaped wheel is made by mounting any standard wheel of 1/2" to 3/4" face on the spindle and shaping it with the dresser or diamond. (The operator should make sure to protect his eyes with safety goggles or a simple shield.) This "V" wheel will be useful to grind the profile of any pattern in a few minutes as long as the design does not have intricate shapes too thin for the "V" to enter, when a fine saw must be used.

Mounted grinding points can be used to advantage as long as they revolve fast enough, but most of the small electric grinders either run hot or do not have enough power to make much impression on pearl shell. In such cases, hand carving is often quicker.

The final carving is done with small hand chisels which are easily made on the grinding wheels from small files, or can be bought ready-made from any jeweller's supply house.

Muriatic acid has some use in both etching a pattern on to a shell, in polishing in conjunction with ice water (which few island workshops have) and in cleaning out the bottom of deep cuts in shell. Acid is unpleasant in a workshop, and the fumes rust everything with which they come in contact.

Two Types Of Carving

Carving patterns into large shells is the most fascinating part of shell work, as the shell changes colour as one cuts deeper.

Two distinct types of carving are possible. When the shell is to be viewed by daylight or by front lighting, a relief carving is usually preferable. In this work the shell is first ground down just enough to remove only the bark before the pattern is marked out. This can be traced or etched on, and the carving can be started with a grinding point or with a 1/2" wood chisel sharpened with a steel bevel.

Soaking the shell overnight softens it slightly, and the dust can be kept down using a wet sponge.

As the shell is removed the colour changes, and it is only a matter of experience to know when to stop. The deeper the cuts the whiter or lighter the shell becomes. It is finally polished with buffs.

When a shell is needed as a lamp shade, or with back lighting, a more pleasing and in some ways easier method is to mount the shell over a hole in a bench. A bright light is shown under the shell while the surface is comparatively dark. It is then possible to carve the shell down until it becomes translucent. The pattern then appears like a photographic print, with the shell varying in colour with each cut.

Some very striking results can be obtained, and the finished work can only be limited by the patience and artistic ability of the carver.

Most islands have some beautiful native timbers which are excellent for wood carving. Book ends, cigarette boxes, glass trays, lamps, etc., can all be made with a combination of well-polished shell. The common Au timber (*Hibiscus tiliacus*) can be changed by applications of coral lime to a beautiful green colour, while Miru, tamanu and tou have few timbers to excel them.

When once a few power tools have been added to a workshop the process follows a natural course. From simple grinding tools to circular and bandsaws, wood lathes, planers—all can be made in the beginning from materials collected from junk piles which are around most towns, from pieces tucked away in old buildings and under floors, or in old wrecks lying on many reefs—some since the first missionaries and traders came to the Pacific.

I will not suggest that anyone who has ever worked in a modern workshop will not find this home-made equipment inefficient, inaccurate and frustrating at times, but the islander who wants to progress from the bare subsistence level of craftwork to a comfortable standard of living will find that with a little effort and patience this can in fact be achieved.

Further SPC Technical Meeting On Co-operatives

The South Pacific Commission's second technical meeting on co-operatives will be held at its headquarters in Nouméa from April 13-26. Participants from territories throughout the Pacific will attend.

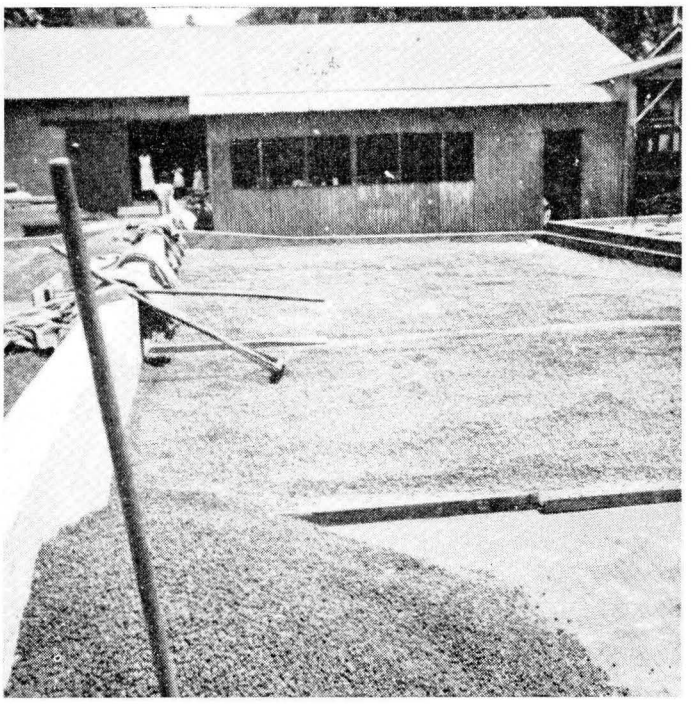
The main purpose of the meeting is to provide an opportunity for registrars and equivalent officers to consider problems associated with the training and education of personnel selected for co-operative posts in the Pacific. Certain technical questions considered at the previous technical meeting held at Port Morseby in July, 1958, will also be further considered.

The following agenda has been drawn up:

1. Training and education.
   - (i) The training of staff of government departments;
   - (ii) the training of directors, office-bearers and employees;
   - (iii) the education of members;
   - (iv) co-operative education and the community;
   - (v) financial and accounting procedures.
2. Co-operatives in relation to capital formation and credit.

The Food and Agriculture Organisation of the United Nations is arranging for a consultant to attend the meeting, as well as its agricultural co-operatives specialist. The Governments of the United States and the United Kingdom will each send an observer.

Commission officers attending the meeting will be Dr. Richard Seddon, executive officer for social development, under whose direction the co-operatives project is being carried out; the co-operativees officer, Mr. R. H. Boyan; and Mr. V. D. Stace, economist.



Above: Modern coffee bean drying area on a New Caledonia plantation. Right: Native-grown beans drying on beaten earth.

Coffee Production In The South Pacific

New Caledonia is still the main coffee exporting territory in the South Pacific. However, production in Papua and New Guinea is increasing rapidly, and may soon be the highest in the region. In other territories—notably Western Samoa, French Polynesia, and Tonga—steps are being taken to re-establish or expand coffee production for local consumption and export. Latest trends in the industry in the Pacific are reviewed in this survey, which concludes with a brief commentary on the international coffee situation.

By V. D. STACE*

PRIOR to World War I there was widespread interest throughout the South Pacific in commercial coffee production. In several territories, large and small plantations had been established successfully, and continuing expansion of the industry was generally expected. However, there was much less enthusiasm for coffee production in the region in the inter-war years, as international marketing problems and local difficulties in cultivation discouraged new enterprise.

During these years many developed plantations were neglected or abandoned, and exports of coffee from the South Pacific remained as inconspicuous items in trade returns except in New Caledonia and New Hebrides, where some progress was achieved. It is of interest to note that in several Pacific islands, where coffee is no longer grown for sale, groves of self-sown coffee remain today as visible reminders of planters' endeavours and disappointments in the inter-war years.

Since World War II a new attitude towards coffee production has developed in several South Pacific territories. Where local labour resources are plentiful and wage rates relatively low, coffee production now offers positive possibilities to administrations actively seeking additional cash crops for development on native smallholdings. New Caledonia still maintains its position as the principal coffee-exporting country in the area. The comparatively rapid growth of the industry in Australian New Guinea suggests, however, that this territory will soon become the principal producer in the region, while positive steps are being taken in Western Samoa, French Polynesia, Tonga and elsewhere to develop or re-establish coffee production for local consumption and export.

A brief survey of coffee production trends and promotional activities in these South Pacific territories follows. A short commentary on the international coffee situation concludes the review.

New Caledonia

This territory's export trade in coffee, which began as early as 1890, reached totals in excess of 1,000 metric tons per year in the years immediately preceding World War II.

In New Caledonia, coffee soon emerged as the principal agricultural crop after failure of the local sugar industry. In spite of price and marketing difficulties and widespread troubles from coffee diseases and pests (of which the Scolyte, *Stephanoderes coffeae*, a berry borer, continues to be the most serious), coffee growing in New Caledonia has remained the agricultural mainstay of the territory. At present, exports total about 1,500 metric tons per year, while a further 200 tons (approx.) annually are consumed locally.

* Economist, South Pacific Commission.

Above: Typical New Caledonia plantation of Coffea robusta under Albizzia lebbeck. Right: Fogging experiment by the French Institute of Oceania to control the berry borer, Stephanoderes coffeae.

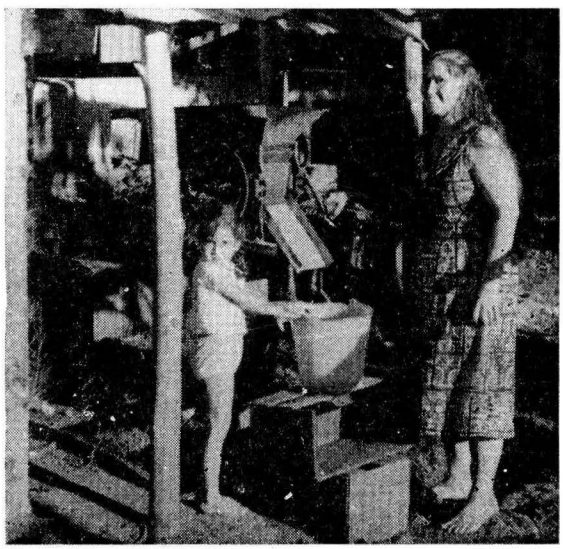
Both *Arabica* and *Robusta* varieties are cultivated, the latter providing about two-thirds in volume of total output. Since 1930 the indigenous people have shown increasing interest in developing their own coffee plantations as well as providing most of the labour required for the industry as a whole. It is estimated that at the present time 45% of the total area devoted to coffee in New Caledonia is in land areas reserved for the native people.

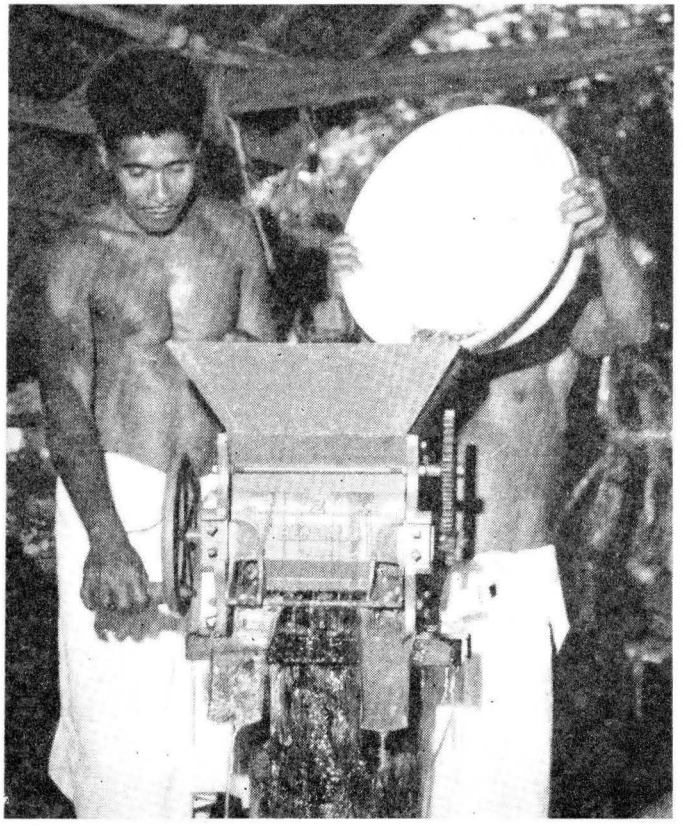
Since World War II, European coffee plantation owners have experienced continuing difficulties in securing plantation labour for cultivation and harvesting. The demand for native manual labour in the territory's mining industry, and the higher wages offered in mining and public works have posed special problems in coffee production that have resulted in the widespread adoption of share - cropping arrangements on European-owned estates. Some long-established plantations have been partially or completely abandoned under pressure of these difficulties.

In addition to other extension services for coffee producers, the Department of Agriculture in New Caledonia provides a series of incentive bonus payments to encourage the planting of new coffee, and the rejuvenation of mature plantations by "lopping back" and the elimination of over-age cultivations. These bonus payments are made in cash at specified rates per tree, spread over appropriate intervals of time to ensure good husbandry and effective supervision. They are available to both native and European growers seeking this form of assistance and willing to comply with the specific timing and standards of husbandry required.

In recent years, coffee producers in New Caledonia have been assisted by a price support and stabilization scheme. During the past three years the prices paid to producers for coffee delivered in Nouméa have been based on 60 francs C.F.P. per kilogram for *Robusta,* extra

Coffee-growing in French Polynesia. Below: Coffee nursery, Afareaitu district, Moorea. Right: Pulping coffee berries, Mahina district, Tahiti.





Above: Pulping coffee berries on a plantation on Rogeia Island near Samarai, Eastern Papua. Right: Coffee being picked from a four-year-old tree on a native-owned plantation at Palimp, near Mount Hagen, in the western highlands of New Guinea.

prima, and 96 francs per kilogram for *Arabica*, extra prima. During 1959 the territorial Government subsidy to this scheme totalled 10,053,000 francs C.F.P.

Coffee exports during this year totalled 1,425 metric tons valued at 91 million francs C.F.P. which may be compared with the exports of copra, the territory's next most important agricultural product, which totalled 2,354 metric tons in 1959 valued at under 36 million francs C.F.P.

New Hebrides

In the inter-war years the New Hebrides followed New Caledonia in order of importance among the South Pacific territories producing coffee. The output of both *Robusta* and *Arabica* varieties then reached between 300 and 400 tons a year, with a peak export figure of 627 tons recorded in 1938.

However, many of the plantations which were abandoned during the Pacific wartime years have not been rehabilitated. With a few individual exceptions, the local planters' interest in coffee has not revived in recent years. Labour difficulties are held to be responsible for this, and for the low standards of maintenance now generally prevailing. During the three years 1957/1959, coffee exports from the Condominium averaged 229 metric tons per annum.

French Polynesia

Prior to 1935, production of coffee in French Polynesia was mainly for local consumption. Exports for the period 1935/1940 were small, ranging from 20 to 75 metric tons a year.

After World War II, exports were subject to wide variations in totals, ranging from 34 metric tons each year in 1953 and 1954 to 331 tons in 1956. During the three years 1957/59, exports averaged 158 tons, while an estimated 175 metric tons annually were absorbed in local consumption.

Arabica coffee is produced exclusively, and output is subject to wide seasonal fluctuations through local weather conditions, the vagaries of overseas market price fluctuations and the economic competition of alternative crops, notably vanilla.

In some of the Austral Islands e.g. Rapa and Raivavae, coffee is the principal cash crop. In many locations it is a harvested rather than a cultivated crop, the yield coming from self-sown coffee trees growing freely in the foothills. At present French Polynesia is free from the depredations of the Scolyte borer and other serious coffee pests.

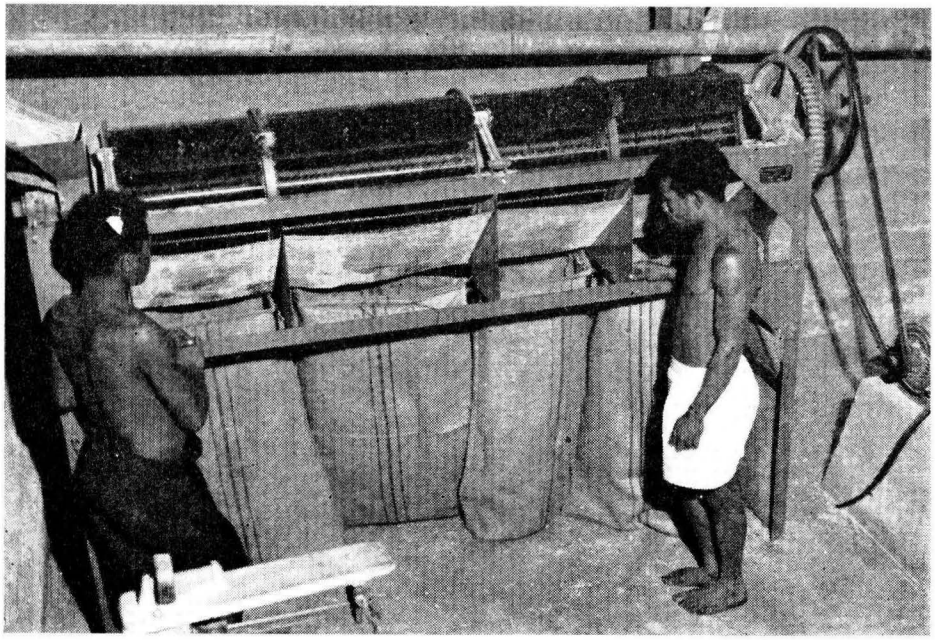
Coffee exports from Tahiti are closely supervised to maintain quality standards, and agricultural extension services are available to producers, including the provision of planting material and assistance in the securing of equipment for cultivation and processing.

Papua And New Guinea

AUSTRALIAN NEW GUINEA: In recent years a virile coffee industry has developed in Australian New Guinea. Exports from the territory totalled 959 tons in the year ended June, 1959, as compared with 380 tons a year earlier and nominal quantities prior to 1957.

Just over a third of the 1958/59 exports came from native-owned plantations, and this proportion is expected to increase as plantations mature and new areas are developed. Plantings by native growers increased from 4,100 acres in 1957/58 to an estimated 5,300 acres in 1958/59. The bulk of these plantings are in the Eastern Highlands and Morobe Districts where over three million trees are now under cultivation.

With a substantial coffee export industry in sight, with both *Arabica* and



A coffee grading and bagging machine in operation on a plantation at Goroka in the central highlands of New Guinea.

Robusta varieties available, a special conference was held in Goroka in 1959 to discuss arrangements for the future marketing of the territory's coffee in Australia.

Prior to World War II New Guinea's exports of coffee were nominal, averaging about 50 tons a year in the period 1936/1940.

PAPUA: A coffee industry is also developing quite rapidly in Papua among native smallholders. In the Milne Bay area more than 120,000 *Robusta* and 100,000 *Arabica* trees have been planted. Recent plantings in the Northern District exceed 200,000 trees. Most of these plantings are expected to come into bearing within the next two or three years.

In both Australian New Guinea and Papua, native growers are given technical assistance in cultivation and processing. As trees come into bearing small hullers are distributed and the growers are encouraged to market their coffee "in parchment," either through central coffee milling plants under European management or through normal trade channels.

Western Samoa

Until recently both *Arabica* and *Robusta* coffees were produced in Western Samoa for local consumption only. The Western Samoa Trust Estates has recently established a processing plant to serve its present coffee plantations of 200 to 300 acres, plus a further 1,000 acres of new plantations (the establishment of the latter is forecast in the Estates' current development programme). In addition, a few European planters and several Samoans have developed plantations of coffee, ranging from one to thirty acres in area, primarily to meet an expanding local demand for their product.

Tonga

The Department of Agriculture has undertaken preliminary experimental work, and is providing planting material to assist the development of coffee growing on smallholders' allotments on the islands of Tongatapu and 'Eua.

Cook Islands

Preliminary steps have been taken to increase coffee production on the island of Mangaia by thinning existing stands of self-sown coffee and by planting seedlings under supervision.

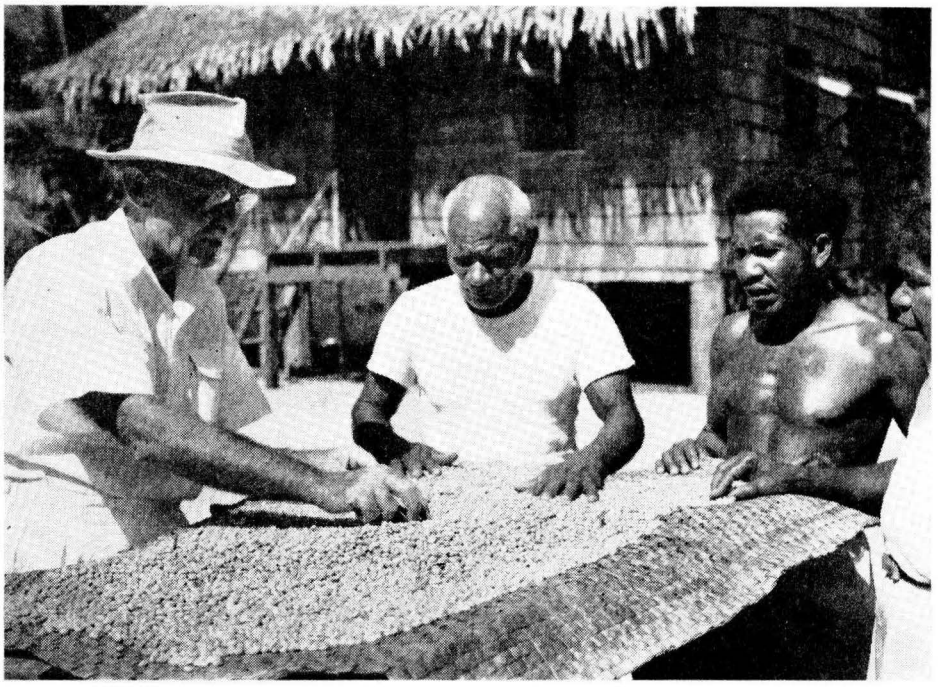
Fiji

The report of the recent Burns Commission included recommendations for the establishment of a coffee industry in Fiji primarily on the basis of smallholdings employing family labour.

1960/61 International Coffee Situation

World coffee production in 1959/60 was at the record level of 76.2 million bags (weighing 60 kilograms per bag) of which 39.9 million bags were produced

Below: Part of the Arabica collection established at the Nadururloulou plant introduction station, Fiji. Many thousands of coffee seedlings have been distributed to planters from this station in recent years. Right: Coffee seedlings, grown from seed produced at Nadururloulou station, in the Colonial Sugar Refining Company's nursery.



A regional agricultural officer checking the quality of coffee beans grown in a village plot, Rogeia Island, Eastern Papua.

in Brazil. Estimates of output in 1960/61 suggest that the forthcoming crop may be 10% smaller than last year's record total, but still substantially in excess of current rates of consumption. By September, 1961, it seems probable that accumulated stocks of unsold coffee will equal the total amount normally exported by all countries in a two-year period.

International over-production of coffee is not a new problem, and once again the supply situation is dominated by a spectacular increase in Brazil's production. From an average annual production of 15.5 million bags for the five years 1950/54, coffee output in Brazil increased to 26.8 million bags in 1958/59, and 39.9 million bags in 1959/60. A high proportion of this increase was from young trees planted since 1950, which have responded well to favourable climatic conditions following the disastrous frosts in 1955.

Under the stimulus of the favourable world market prices that have obtained since World War II, coffee production in African countries in particular has advanced rapidly. In 1959 the African countries provided over 23 per cent. of the world's trade in coffee as compared with about 8 per cent. in the period preceding World War II.

The rapid progress of this cash crop in the "emerging" under - developed countries of Africa is not surprising. The adaptability of commercial coffee varieties to a wide range of climatic and soil conditions is an important factor in this trend, as is the fact that this crop lends itself to cultivation on smallholdings by peasant farmers with very limited capital resources.

A continuing decline in market prices may curb expansion in these areas, but coffee production on native smallholdings worked by family labour is not very responsive to overseas marketing trends of moderate proportions. At present there is little to suggest that a serious slump in prices will develop to ensure more even balance between world supply and demand flows, or the absorption of accumulating international surplus stocks of marketable coffee.

During and since World War II, international co-operation between the major countries producing and consuming coffee has regulated the world's trade in this commodity in a manner contrasting sharply with the trading freedom and violent price adjustments of the inter-war period.

In September, 1959, an international coffee agreement was signed by the fifteen Latin American countries producing coffee, by France representing the French Community producers in Africa and by Portugal on behalf of its overseas territories. The United Kingdom and Belgium participated, and signed "declarations of intent" agreeing to limit exports from their associated African territories. The 1959 agreement established a series of export quotas for the ensuing year covering about 95 per cent. of world coffee production.

In June, 1960, the agreement was re-affirmed and extended for a further year—until September, 1961—to ensure a continuance of orderly marketing procedures with relatively stable prices and the development of officially-sponsored endeavours to bring better balance between the total market demand for coffee and available supplies.

Transistor Radios Being Manufactured In Rarotonga

Transistor radio sets are now being manufactured in Rarotonga by the Cook Islands' Radio Manufacturing Co-operative Society Ltd., which was formed recently by the Rarotonga Young Men's Radio Club. The Society employs two of its members fulltime on the project. Parts to manufacture the first two hundred receivers have been imported from the United Kingdom, Holland, Denmark, Japan and New Zealand.

A table model is already in production, while a prototype portable receiver has been developed and is now undergoing tests. The demand for the available model already exceeds the supply and is expected to increase still further when the local radio station ZK1ZA increases its broadcasting hours.

The Rarotonga Young Men's Radio Club also recently completed the construction of a 400-watt broadcast transmitter from parts donated by radio enthusiasts overseas and its own members, and supplied by the Government. This transmitter is used on full power for the Administration's broadcasting station ZK1ZA, and on reduced power for the Club's station ZK1BO.

Territorial Health Directors To Meet At Noumea

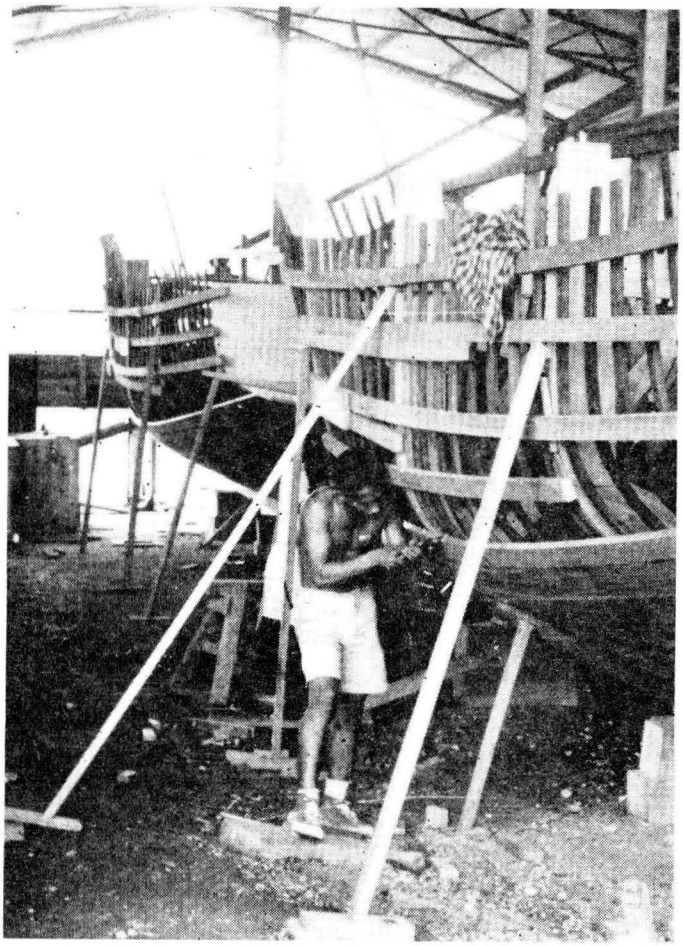
The development of health education throughout the Pacific will be the main topic of discussion at a meeting of directors of health services from South Pacific territories, to be held from May 15-23 at the headquarters of the South Pacific Commission at Nouméa.

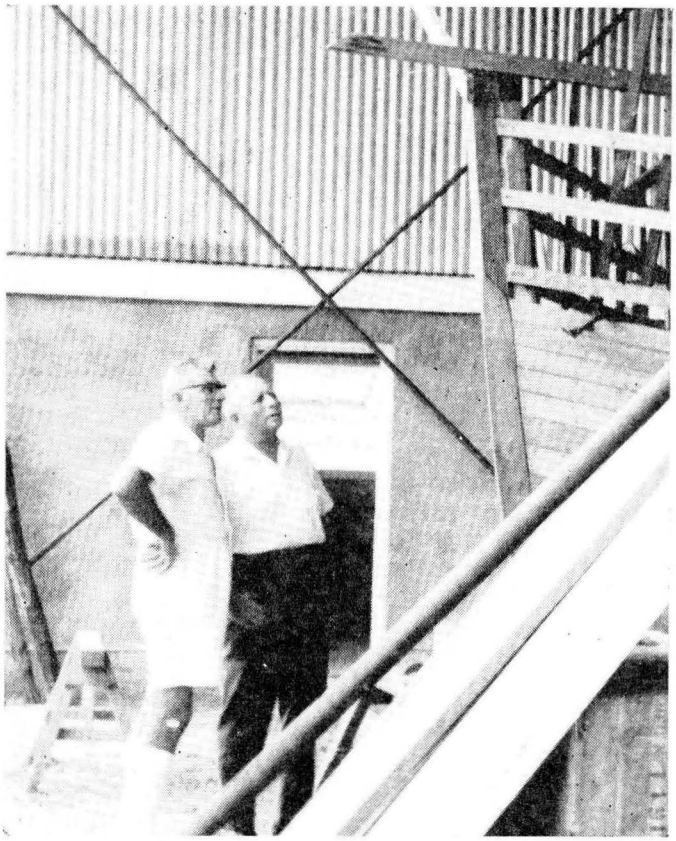
The meeting will discuss plans for inter-territorial co-operation in the health education field, and will consider ways in which the Commission may be able to assist. Other items for discussion include the technical training of health staff and auxiliaries, and the development of maternal and child health programmes.

Cook Islanders Achieve Three "Firsts"

Under the scholarship scheme for Cook Islanders instituted in 1947 by the New Zealand Government, three "firsts" have been achieved.

Dr. Joseph Williams of Aitutaki is the first Maori from New Zealand island territories to complete a medical degree; Mr. Tere Mataio of Rarotonga the first to become a fully-qualified solicitor; and Mr. Metuakore Sadaraka of Aitutaki the first to take a Master of Arts degree. All are twenty-six years of age.





Left: Trainee working on one of the cutters. The extremely strong construction is apparent.

Above: The director of the School, Mr. Cecil Fisher (left), discussing a constructional point with the author.

Trainees Build Cutters For SPC Fisheries Course

The three 25-foot fishing cutters now being built by trainees at the SPC Boatbuilding School at Auki, Malaita Island, in the British Solomons, will be used to train participants who will attend the SPC Fisheries Centre, expected to open on Tulagi Island next August. Progress being made at both School and Centre is described below by the Commission's fisheries officer . . .

H. VAN PEL

IN January I paid a two-week visit to the SPC Boatbuilding Course being held at Auki, on Malaita Island, in the British Solomons, where twenty-four trainees from six territories in the Commission area are learning to build wooden boats under the direction of Mr. Cecil Fisher.

Three 25-foot motor fishing cutters are at present under construction, and I was well satisfied with the progress being made. A group of eight trainees is working on each boat, each trainee taking it in turn to act as leader. Progress is the same on each boat, and at the time of my visit the hulls were half planked.

The boats are being built of local timbers. The design and the workmanship are attracting much favourable comment from both local Solomon islanders and European residents. As communications and transport in the Protectorate are mainly by coastal vessel, the Administration, too, sees scope for wider use of vessels of this type, and it intends to construct four similar boats in due course.

First Boats For Fisheries Training Centre

It is expected that the first three boats will be completed by June next, in time for use during the SPC Fisheries Training Centre to be held at Tulagi, in the British Solomon Islands, under the auspices of the Food and Agriculture Organization of the United Nations, the South Pacific Commission, and the local Administration.

Twenty-five trainees will attend from Papua and New Guinea, the British Solomon Islands, and the New Hebrides. The Course, which is expected to open in August, will last ten weeks.

During my visit to Tulagi—which is one of the islands of the Florida Group —I found that the buildings for the Centre were almost completed, as were the houses for the instructors. An existing building will be used for storing fishing gear, and as a gear construction workshop. All buildings are near the waterfront.

With wide transom and plenty of beam, the cutters are roomy, and should make excellent sea boats.

During my stay, tests were made to find suitable areas where fishing instruction could be carried out during training. Only a few hundred yards from the actual site of the Centre we found three large shoals of fish near the surface, comprising in all about one thousand mackerel tuna (*Euthynnus affinis*) preying on anchovies. Many shoals of mackerel tuna were also seen on the south-east side of Florida Island.

Several trolling tests were also made, and the best fishing grounds were found to be over submerged reefs south, south-east and east of South Florida. The catches consisted of barred Spanish mackerel (*Cybium commersoni*), yellow-fin tuna (*Neothunnus macropterus*), trevally (*Carangidae*), mackerel tuna (*Euthynnus affinis*), rainbow runner (*Elagatis bipinnulatus*), dogtooth tuna (*Gymnosarda nuda*) and waigeu snapper (*Lutianus vaigiensis*).

The results of these trolling tests—and of handline tests carried out in 1960—encourage one to believe that the Fisheries Training Centre will prove to be very successful. It is hoped as one result there will be established a continuing supply of fresh fish for Honiara, since it is anticipated that the Protectorate will, at the end of the Course, retain the three fishing boats in the area, and have trained fishermen to operate them under the supervision of Mr. M. L. Aylett, recently-appointed fisheries officer there. (Mr. Aylett, an Australian, will be taking part in the Course as an instructor.)

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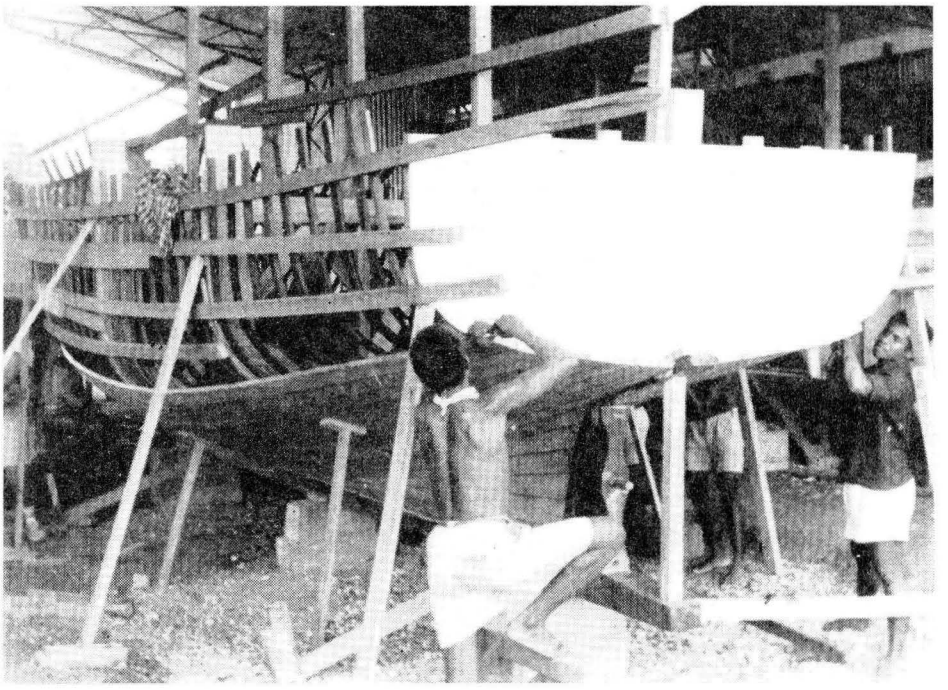
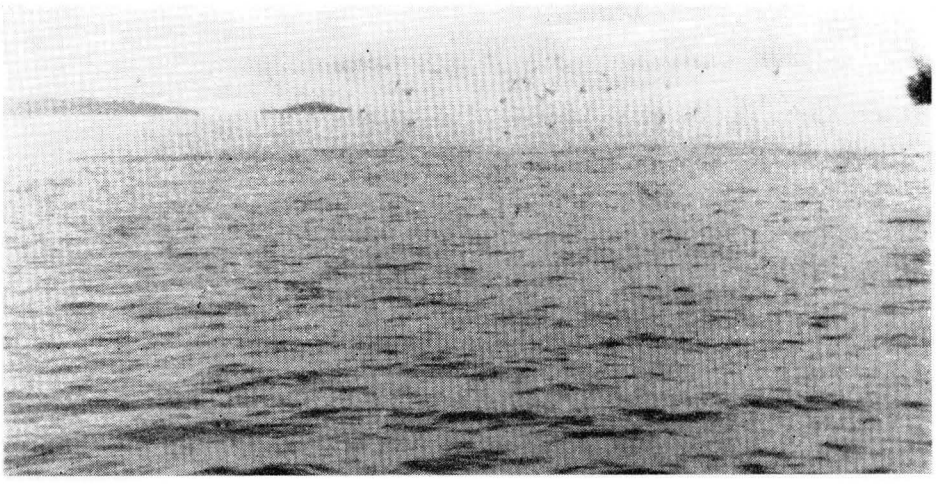
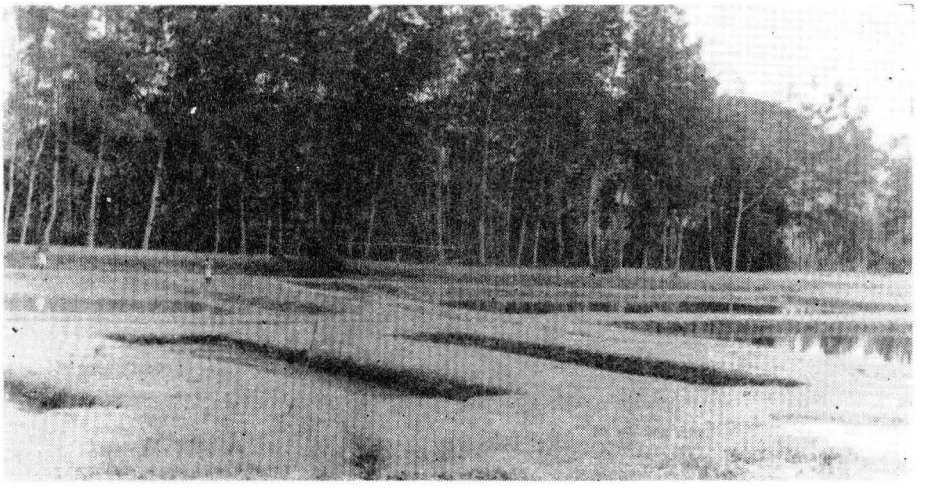
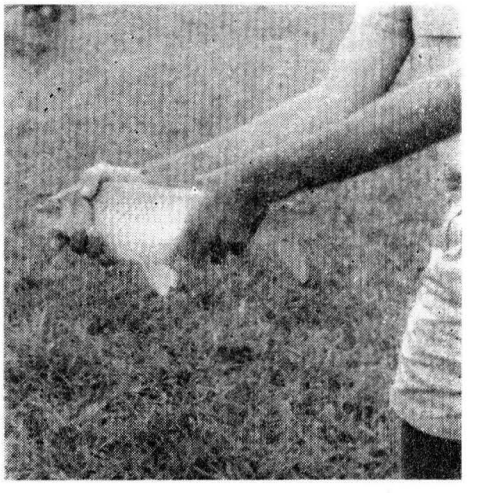




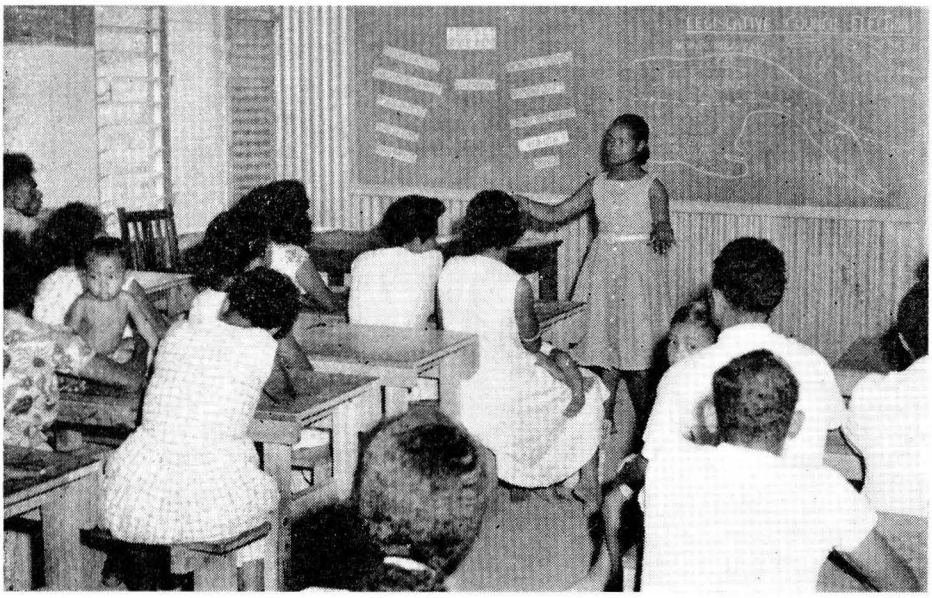
Seabirds reveal the presence of a shoal of mackerel tuna during fishing trials off Tulagi Island.

Below: These fishponds at Dobel, in the New Guinea Highlands, are stocked with Singapore carp, tilapia, and Cantonese carp. Below right: Cantonese carp, 14" long, 14 months old.





Adult Education Courses For Papuans And New Guineans



A talk on the Legislative Council elections, and on the functions and scope of native local government councils.

Adult education courses for Papuans and New Guineans are being conducted in a number of centres throughout the territory. Their purpose is explained below.

By J. K. McCARTHY*

THE purpose of these adult education courses is to provide informal educational facilities for adults and enable parents to share in the general advancement which will result from the intensified formal education programme now being carried out in the territory. Without some system of adult education many illiterate and semi-illiterate parents would be cut off from the general educational progress of their children and the younger adults who are benefiting by formal schooling.

The adult education courses are designed for married couples so they can help the women as well as the men. There are special interests for men, and others for women, but many of the classes are being attended by men and women.

Wide Range Of Subjects

The subjects dealt with range from the functions and scope of native local government councils and talks on the coming Legislative Council elections, to domestic science topics, village agriculture and lessons in simple carpentry for the making of home furniture and fixtures.

Also, there are frequent informal discussions on topics raised by the students. At the Sogeri course, for instance, students from the more distant villages asked for a talk on road safety rules for pedestrians, as on their occasional visits to Port Moresby they became confused by the traffic. The students also take part in group sports which can be played in the villages, and learn new songs to take back to their people.

Each course lasts for approximately two weeks, and the students come from all parts of the sub-District concerned. In some areas the courses will be attended by native local government councillors and their wives, while in others, village leaders will be chosen by their people to represent the village groups.

Emphasis Is On Learning

Throughout the courses the emphasis is on learning in order to take knowledge back to the villages, and the students at the three courses already in progress have brought forward a wide range of topics for discussion.

At the opening of the Finschhafen Course in January I gave a short talk and following this, the number of questions asked by the students extended the opening ceremony to more than an hour. The enthusiasm shown by the twenty married couples attending the Course, and their obvious appreciation of the opportunity to extend their general knowledge, was very impressive.

There is no doubt that this new system of adult education will be of great benefit to the Papuan and New Guinean population as it becomes extended through the territory.

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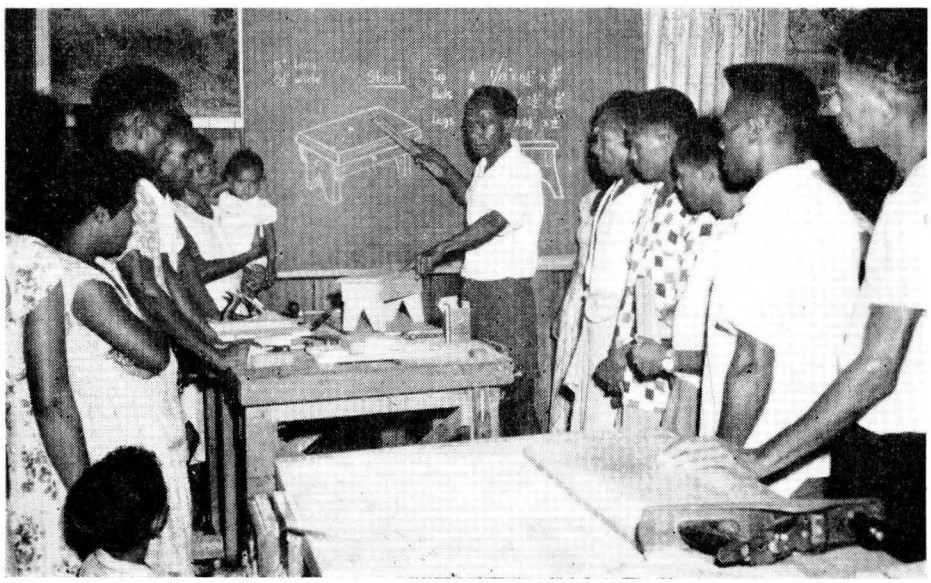
* Director of Native Affairs, Administration of Papua and New Guinea.



A manual arts teacher giving instruction on the making of simple furniture to an adult education group at Sogeri, near Port Moresby.

Participants who attended the Pacific Island Games meeting at SPC headquarters. Front row (l. to r.): Mr. J. Y. Riou, New Caledonia); Mr. John P. Samia, American Samoa; Mr. T. R. Smith (Secretary-General); Mr. L. O. Simpson, Fiji; Dr. Richard Seddon (Executive Officer for Social Development); Hon. F. C. F. Nelson, Western Samoa; Mr. P. F. Henderson, Cook Islands. Back row (l. to r.): Mr. R. Delaveuve, New Hebrides; Mr. F. P. C. Kaad, Papua and New Guinea; Dr. P. C. Cassiau, French Polynesia; Mr. Henri A. Aarsse, Netherlands New Guinea; Mr. Alwyn Moon (Adviser).

First South Pacific Games In 1963

Beginning in 1963, regional Pacific islands sports tournaments known as the South Pacific Games will be held every three years. A South Pacific Games Council will shortly be set up to organize these gatherings. These decisions were taken at a meeting held at SPC headquarters from March 9-15.

By RICHARD SEDDON*

THE fourth South Pacific Conference held at Rabaul in 1959 recommended that the South Pacific Commission explore with the territories of the region the possibility of holding inter-territorial triennial tournaments in the South Pacific for the purpose of fostering better relations and understanding.

To give effect to the wishes of the Conference the Commission invited territories each to send a delegate to a preliminary meeting, the main purpose of which would be to consider the practicability of the proposal.

The meeting was duly convened at Commission headquarters at Nouméa on March 9 and continued until March 15. Nine territories were directly represented, as follows:

AMERICAN SAMOA	MR. JOHN P. SAMIA
COOK ISLANDS	MR. P. F. HENDERSON
FIJI	MR. L. O. SIMPSON
FRENCH POLYNESIA	DR. P. C. CASSIAU
NETHERLANDS NEW GUINEA	MR. H. A. AARSSE
NEW CALEDONIA	MR. J. Y. RIOU
	MR. G. ROBERT
NEW HEBRIDES	MR. R. DELAVEUVE
PAPUA AND NEW GUINEA	MR. F. P. C. KAAD
WESTERN SAMOA	HON. F. C. F. NELSON

These delegates were joined by an adviser, Mr. Alwyn Moon, Secretary of the Auckland Amateur Sports Association, New Zealand, by the Secretary-General of the South Pacific Commission, Mr. T. R. Smith, and the Commission's Executive Officer for Social Development, Dr. Richard Seddon.

Fiji Delegate Elected Chairman

The meeting was characterized by the uniformly high degree of interest expressed by the territorial delegates and by the expeditious way in which it approached its task under the chairmanship of the Fiji delegate, Mr. L. O. Simpson, Honorary Secretary of the Fiji Amateur Athletics Association and Fiji Amateur Sports Association.

Following a round-table discussion in which all delegates were invited to express their views on the practicability and desirability of holding Pacific Island Games, there was unanimous agreement that the proposed Games should receive the active support of all island territories in the South Pacific.

The meeting resolved that there should be regional Pacific Island Games, and that they should be called SOUTH PACIFIC GAMES.

It was also decided that the first Games should be held in 1963, and thereafter at three-yearly intervals. The hope was expressed that Fiji might find it possible to act as host for the first Games.

A long discussion took place on the question of the sports to be included, the general feeling being that—

(a) the number of sports for the first Games should be restricted;

(b) participation by women should be encouraged; and

(c) some sport typical of the South Pacific area should be included.

Soccer, Athletics, Tennis

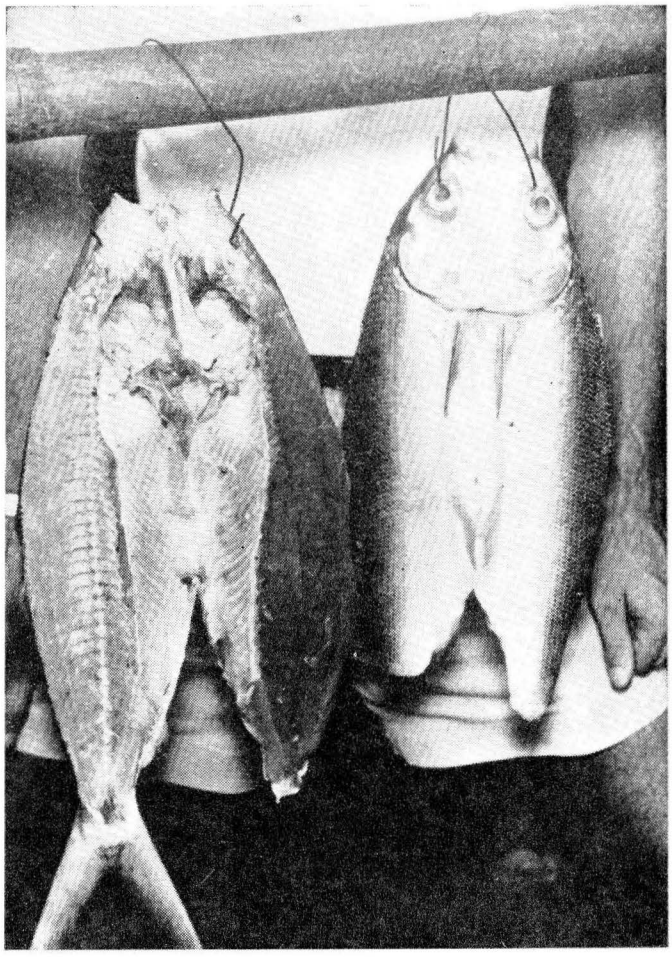
Finally, the following official sports were selected: Soccer, Athletics (men and women), Tennis (men and women), the latter event to be a team game and not individual competitions.

In order to clarify the question of what athletic events should be included, it was decided that the programme should as nearly as possible be the same as that for the Olympic Games.

(Continued on page 34)

* Executive Officer for Social Development, South Pacific Commission

Inspection of fish being prepared for smoking. Each fish is cleaned, backbone removed, and then washed.



After soaking in brine, the fish are hung up until tacky to touch. Note wires hooked through eye sockets.

Curing Fish By Smoking

The method outlined below for the smoke-curing of fish, and the smoke-house appearing in the illustrations, were developed by the Department of Agriculture, Stock and Fisheries in the territory of Papua and New Guinea.

IT is essential for the production of a good quality smoked product that the fish be fresh, carefully cleaned and blooded, brined in fresh brine made with good quality salt, and then smoked after a preliminary drying and heating to form a firm pellicle which prevents the absorption of moisture and bacteria.

The procedure described below will give a product with a limited keeping time. By increasing the period of drying and smoking, a product having a moisture content of less than 20% will be obtained, and this will keep in a satisfactory manner in the tropics for a period of from four to six months.

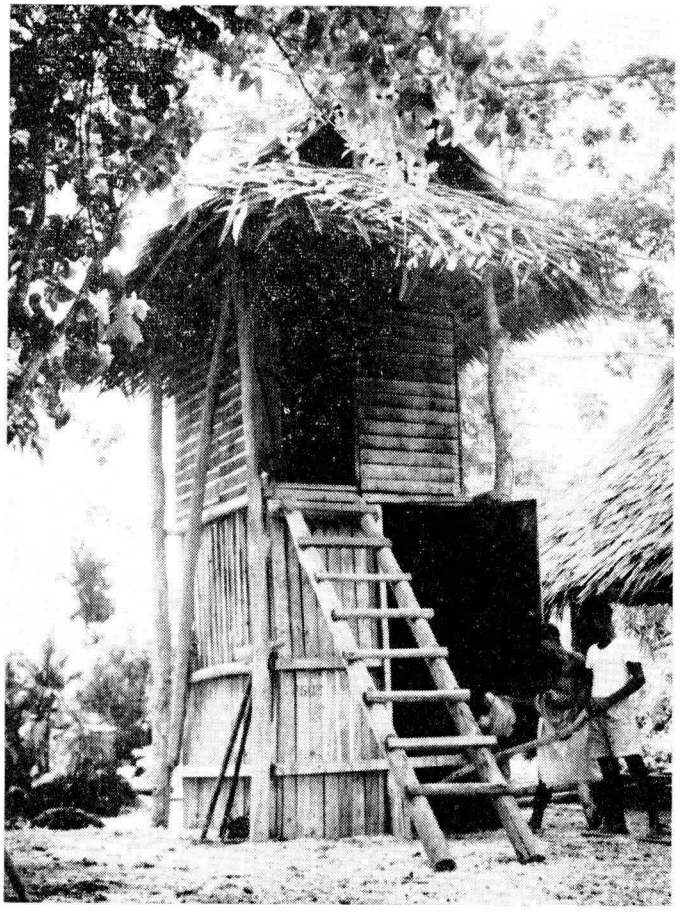
Cleaning, Curing, And Smoking Procedures

CLEANING: Fish is cleaned, backbone removed and all blood washed away. Bruised and badly-cut fish should be rejected. A certain skill is required to make the cut along the backbone so that the surface of the flesh remains smooth; a long, single, slow stroke with a suitable knife is most effective.

CURING: The cleaned fish — large pieces as fillets and smaller fish simply opened from the back — are put into brine and allowed to soak for 1 hour. Very large fish may require 1½ hours, but for average sized mullet, 1 hour is sufficient. They are then taken out, rinsed in a 3% brine to remove the surface salt, hung on sticks and placed on the draining racks in the shade, preferably in a breeze. After approximately 2 hours draining they become "tacky" to the touch and are placed in the smoke-house.

BRINE: Eight gallons of water, 12 pounds of salt, and 1 ounce of saltpetre is sufficient to take about 50 fish or 100 pounds weight. Increase the amount pro rata if more fish are to be cured.

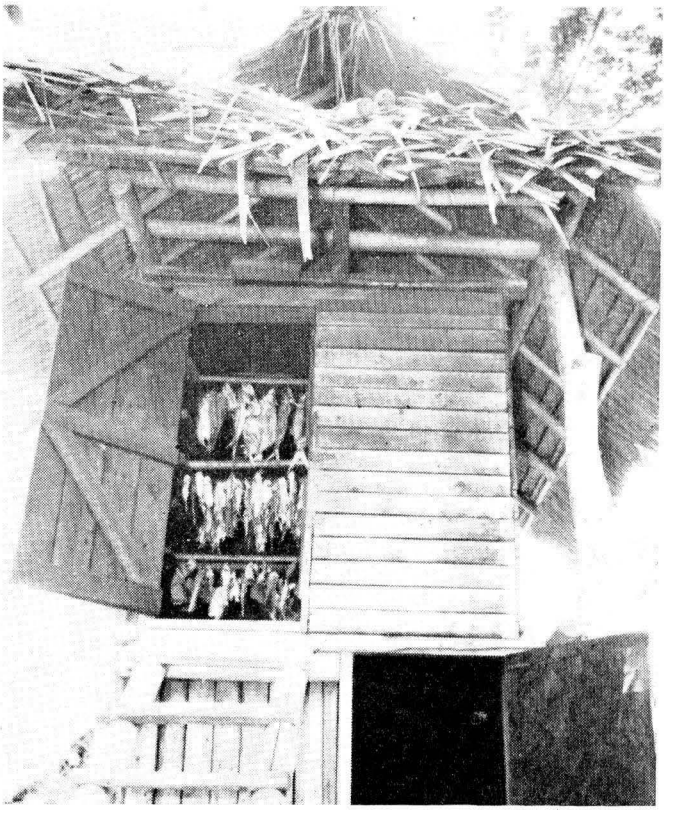
SMOKING: Open draught in ceiling to the fullest extent. Make wood fire and subject fish to an average heat. Should fish commence to quiver on the hooks, then the fire is too hot. After 2 hours draw the fire leaving all red coals in a heap in the centre. Then close draughter in the ceiling to 1/4 open, make a ring round the coals with 1 bag of sawdust (approximately 150 lb. flour bag). After sawdust is ignited close draughter on bottom of fire-room door. One bag of sawdust will smoulder for



This smoke-house is 6′ square and 18′ high (9′ to arc mesh floor, which may be of bamboo). The smoke-house was built from packing cases, the lower section being lined with old galvanized iron. Roof and framework are of local materials. Coconut husks are being placed on the fire to make smoke.

approximately 10 hours. The fish should be medium-smoked after this period. Open all doors and draughters and allow it to come to normal temperature before removing from smoke-house.

HANDLING OF FISH: Fish should be brought in not later than 12 noon. This allows cleaning and curing to be finished by 3 p.m. From 3 to 5 p.m. the fish are drying. At approximately 5 p.m. they are ready for smoking. Then after 2 hours of heat at 7 p.m. sawdust may be put on and the smoke-house left for the night. It is better to have the draining of the fish finished before the damp night air sets in; if draining is incomplete, the fish will have not the tight "tackiness," and will tend to be spongy when smoked. Mullet of an average weight of 2 lb. smoke the best. Larger fish must be allowed to remain longer in the brine and also have a longer period under heat.



Above right: View showing fish hung from racks inside the smoke-house.

Close-up of fish after one night of smoke-drying. Note shrivelled appearance.

Her Majesty Queen Salote inspecting some of the sewing exhibits.

Tongan Women Hold Annual Show

Each year the Langa Fonua, a Tongan women's organization dedicated to the progress of home and community, holds an annual Show. Sections for exhibits include Tongan handcrafts, sewing, cookery, garden produce, flowers and poultry.

By DILYS E. ROWLANDS

SATURDAY, November 12, was an important day for the members of the Tongan Women's Association, "KO E LANGA FONUA 'A E FEFINE TONGA", for it was the day of their Annual Show. Anxious glances had been cast at the sky, for the Show was to be held in the open air and the weather for some days had been uncertain. However, although the day was overcast, no rain fell and all was well.

Her Majesty Queen Salote Tupou, G.C.V.O., G.B.E., who is President of the Association and who has not missed a Show since the first one was held seven years ago, inspected the exhibits. She congratulated the women on the steady improvement in the quality of the work which had been shown throughout the years.

The Tongan handwork included mats, trays, baskets of various shapes, dress materials printed with island dyes, Tongan curtains and cushions and articles made from shells. A new section this year was that for baby baskets. Other items were soap, starch, buttons and ornaments made from Tongan materials.

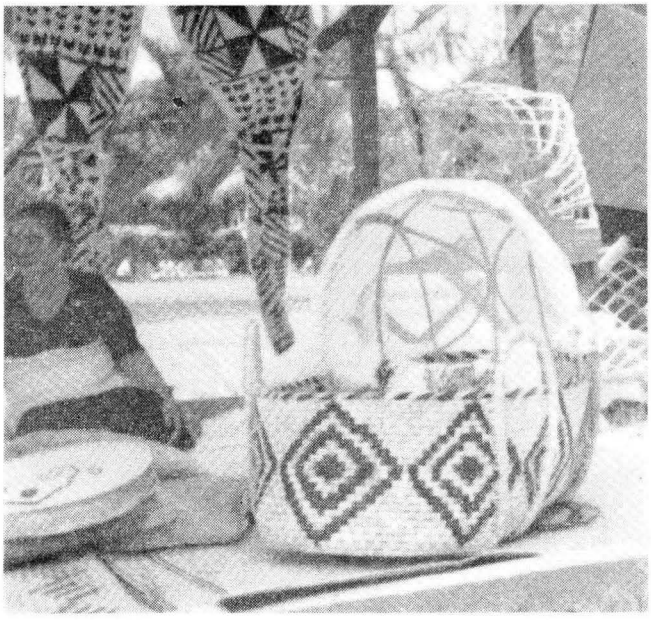
The sewing section had men's coats and shirts, children's clothing, embroidered dresses, knitted articles, patchwork quilts and fancy work of various kinds. The cookery section included cakes, scones, bread, jams and jellies, cordials, puddings and various Tongan delicacies.

Evidence of the various interests which had been encouraged among the women was given by the baskets of fruit and vegetables, and the collections of flowers from members' own gardens, as well as by the poultry, eggs, and even little pigs.

Her Majesty presented prizes to the successful competitors in all these sections, and also to the winners of the poetry contest.

Another feature of the Show was the report of the Public Health Officer on the inspection of villages. Shields were presented to representatives of the towns and districts which had been judged the best in sanitation and appearance. These shields for annual competition had been previously donated by Her Majesty Queen Salote, H.R.H. Prince Tu'ipelehake and a former British Consul in Tonga, Mr. A. C. Reid, and his wife.

The schedule has already been drawn up for the next Show, at which it is proposed to have special sections for those who have not previously won prizes.



Part of the Tongan handcrafts exhibits, which included mats, trays, baskets, and dress materials printed with island dyes.

South Pacific Games In 1963

(Continued from page 31)

The following sports were noted as possibilities for future Games: Swimming, Basketball and Cycling.

It was found impossible to discover a typical island sport common to all—or even most—territories, but it was felt that canoe racing offered the greatest potential in this regard. Nevertheless, the host territory may add other sports, participation in which would be by invitation, so that these games may be demonstrated.

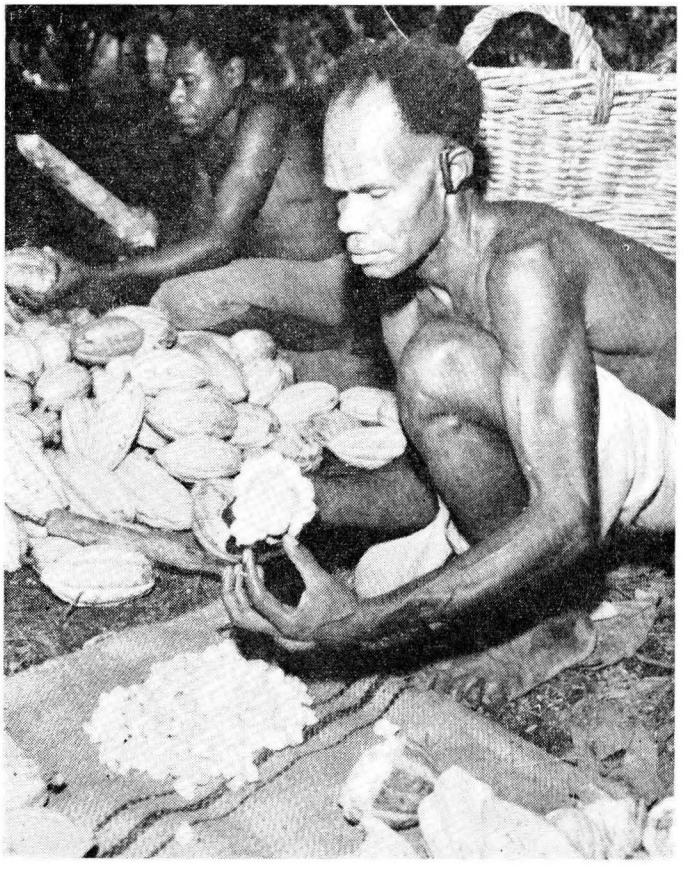
It was resolved that the direction of the South Pacific Games be vested in a South Pacific Games Council for which the meeting drew up a draft constitution and procedures were agreed by which the proposed constitution can be ratified by South Pacific territories supporting the establishment of the Council and the development of the South Pacific Games.

Some Practical Pointers On . . .

The Harvesting Of Cocoa

Practical advice to cocoa growers on picking and opening cocoa pods, and on transporting the wet cocoa beans to the fermentary, is given below by the author, who concludes with a section on the keeping of harvesting records.

By D. R. A. EDEN



Breaking ripe cocoa pods at the Lowlands Agricultural Experiment Station at Keravat, near Rabaul. Splitting the pod in two crossways gives easy access to the cocoa beans.

CAREFUL attention to the details of harvesting cocoa is an essential step towards securing good quality in the processed cocoa beans. Care in picking will also prolong a plantation's maximum yield.

It is important to exercise every care to ensure that only fully ripened fruit is harvested. Upon the state of ripeness depends the sugar content of the fruit pulp, a factor governing the fermentation of the beans and the promotion of chocolate flavour. A high proportion of immature beans will slow down the processes of fermentation, and poor quality will be an inevitable result.

It is not difficult to distinguish a ripe pod. Practically all varieties change from their original colour when ripening. Whether they are green, red, or red-purple, the change will be towards yellow or orange-yellow as the pod matures.

The smooth, green-podded Amelonado turns yellow, while the hybrid Criollo-Forastero changes to an orange hue. It is safe to generalize by saying that all types of cocoa, when ripe, display some degree of yellowness.

Delays In Harvesting

Ripe fruit does not deteriorate quickly on a tree. Such pods can be safely left for periods up to two weeks. Exceptions to this would be during heavy rains, or in areas where overhead shade is dense. In such cases the danger of the fruit becoming infected with black pod disease offers no alternative to the early clearance of all ripe pods from the trees.

In open areas and in fine weather, short delays in harvesting may prove advantageous, especially in an "off" season when pods are scarce. A delay of a week or so will allow all the ripening pods to achieve full maturity or an even degree of ripeness.

Protection Of Flower Cushions Vital

The fruit of the cocoa tree is borne upon what are known as flower cushions. These arise at spots on the old wood which were originally leaf axils. They eventually become small, roughened or raised patches on the bark of the stem and branches of the tree. Flowers, from which the fruit evolves, form on the cushions each flush, year after year. If these cushions are damaged, the flowers, and consequently fruit production, will be limited proportionately to the damage sustained.

The cocoa tree is unable to rehabilitate its bearing areas by forming new flower cushions. For this reason, when a high percentage of cushions are damaged, a tree's bearing potential is lowered; there is little to be done except to replace the tree, or to re-form it, branch by branch, by the use of chupons.

The reason for careful picking will be apparent. If pods are torn from the trees regardless of damage to the flower cushions, and this rough treatment is repeated each time the trees are picked, irreparable harm will be done.

Tools Best Suited For Picking

It is advisable for the planter to provide each member of his picking gang with a suitable harvesting tool, and to exclude from that gang any labourers who are known to be clumsy and heavy-handed.

The planter has a fairly wide range of harvesting tools to choose from, including the machete, a curved knife, secateurs and a harvesting hook.

The machete is popular, but is a rather clumsy implement. Cutting the short fruit stalk behind the base of a pod without slicing the underlying cushion is a delicate operation.

A small curved knife or a pair of secateurs are ideal for cutting a fruit stalk at ground level, but can hardly be used without a ladder or by climbing a tree, when the fruit is high up among the branches. Carrying a ladder from tree to tree slows down harvesting unduly and is uneconomic, and a lot of damage can be done to the trees by climbing.

A combination of tools is recommended; the harvesting hook for cutting off the elevated pods and the knife or pair of secateurs for the low-level work.

A very serviceable harvesting hook can be made on the plantation from sheet steel obtained from an empty petrol drum. The drum is cut open and flattened out with a sledge hammer. The flat steel is then cut into a shape similar to that shown in Fig. 1.

The dotted lines on the upper part indicate where the steel plate is filed and sharpened to form knife edges. The sharp curved edge is used for hooking and cutting a pod from a tree by a downward pull, while the knife edge on top is used for an upward thrust. The square

Harvesting cocoa pods at Naduruloulou, Fiji. Secateurs are ideal for the purpose where pods can be reached from the ground.

flap makes a handle attachment by hammering it around a steel pipe. The housing thus made holds the end of a wooden handle some five feet long. This implement will be found admirable for removing pods from the highest branches of the cocoa tree.

Black Pod Control Combined With Harvesting

Each time fruit is gathered, it is recommended that the task be combined with the removal of all old diseased pods. If harvesting and black pod control are undertaken separately, neither operation is as fully effective as when both are combined. Practice has demonstrated that every branch of a tree is more thoroughly examined for "ripes" and for "blacks" when the search is made a combined operation.

It is particularly important that the searchers should not miss any black pods which may be hanging in the upper branches. Raindrops carry the spores of Phytopthora from such diseased pods to healthy cherelles and fruit below, and it

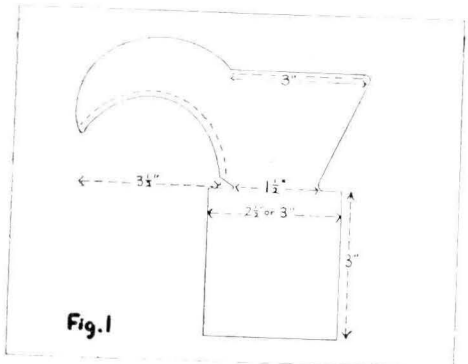


Fig. 1

is essential that this potential source of infection be removed regularly.

A partly-diseased fruit pod need not be thrown away, but care should be exercised to ensure that when these infected pods are opened, all discoloured beans are discarded.

The inclusion of diseased beans with sound material in a fermenting box can adversely affect the whole batch. Putrefactive bacteria may be introduced into the fermenting mass through the agency of black pod material, and a dreaded "cold" ferment may develop. During such a ferment, temperatures never reach 45° C. and the product remains underfermented and flavourless.

Protection Of Beans From Rain

Another factor in harvesting which may adversely affect quality is waterlogging of beans. This condition is brought about by sacks of "wet" beans being left out in heavy rain for long periods without protection. The sacks become saturated with rainwater and the contents are literally washed. The water runs away and carries with it a proportion of the natural sugar content of the fruity mucilage surrounding the cocoa seed. The effectiveness of the mucilage as a multiplying medium for the yeast bacteria of fermentation is thus curtailed.

If sacks of cocoa beans are left out in the open overnight or during rainy weather, they should be given some form of cover. This may be in the form of a banana leaf canopy, a tarpaulin, or sheets of galvanized iron. Old sheets of the latter may be left at convenient collection points around the plantation for such emergencies.

Heaping Of Pods In The Field

Ripe picked pods may be heaped in the field for two or three days without harm, providing, of course, the pods have not been opened. The advantage in this lies in the fact that fruit left in this way, when only partly ripened, matures appreciably. Many planters use this method of heaping to iron out irregularities in the state of ripeness of their fruit.

In places where some of the local inhabitants are inclined to augment their own harvests by borrowing a few baskets of pods from nearby farms, it is probably inadvisable to heap. Ripe fruits left on the trees are difficult to distinguish at night from the green, but a good big heap of picked ripe fruit may prove irresistible to a neighbouring "borrower."

Picking By Piecework

On a large plantation where the estate is divided into blocks of known acreage, such areas are sometimes set aside for pieceworkers, who may be given the exclusive right to pick all ripe cocoa in that particular block, or blocks. Payment is made at so much a pound, wet weight, delivered to a roadside collection point.

To fix such rates it is usual to carry out a test to ascertain the weight of cocoa beans that a skilled picker is capable of gathering, opening and delivering to the collecting point in one working day. Piecework rates are then fixed on the results of such a test.

Deliveries of cocoa beans should be examined to see that the seed is clean and free of the woody placentas which are sometimes purposely left in as "makeweights". (The placenta is the

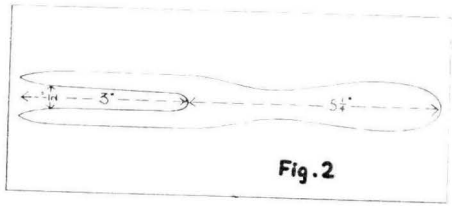


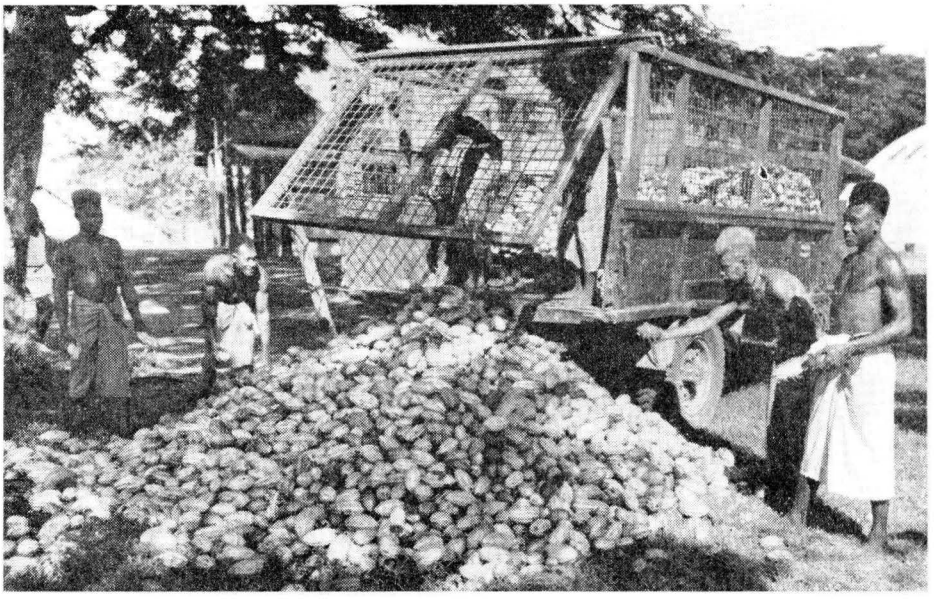
Fig. 2

stringy core of the cocoa pod to which the beans are loosely attached.)

The seeds are readily removed from their placenta with a two-pronged wooden fork, illustrated in Fig. 2. These handy implements can be quickly fashioned by the pickers themselves from wild hibiscus wood or other suitable native timber. Admittedly fingers do the work just as well, but after many hours of opening and scraping out beans the acid fruit juice is likely to attack the hands.

Sacks of wet cocoa beans are filled at convenient collecting points where a plantation truck can pick them up and convey them to the fermentary. The sacks are filled from kerosene tins, oil drums or woven baskets, which are readily carried from the heaps where the pods are opened.

Unwanted chupons can often be conveniently removed during harvesting.



Centralization has advantages if the roads are in good shape. Otherwise the pods are better opened in smaller heaps, and the cocoa beans sacked for transport to the fermentary.

It is common practice to let the pods lie where they are opened, so that they may rot and enrich the soil. It should be mentioned, however, that the cup-shaped half pods hold water and breed mosquitoes. Where malaria or filariasis is troublesome, it is recommended that the pickers be instructed to chop the half-pods into quarters before abandoning the heaps. The planter will find that bonus payments for this extra work will assist in the control of mosquitoes and the diseases they carry.

Opening The Cocoa Pods

Pods should be cut lightly in the middle with a machete, then broken open by hand. The contents should be scooped out. The pods should never be hacked through with the machete. Such a practice invariably slices through some of the beans. The result is that when the cocoa is dried, the planter will find that he has a high percentage of nibs and bare beans.

When the sacks of cocoa beans are uplifted from the field they should bear labels with the picker's name, together with the number or the name of the block from which the seed was harvested.

A sliced section of an empty cocoa pod will provide a handy label; the skin side may be marked with a sharpened twig to provide the information required. An advantage of this ready-to-hand label is that the scratch writing is indelible, and will not wash off in the rain.

Harvesting Records

The foregoing information is required as a means of identifying the worker who picked the beans, and for crediting him through the Pickers' Book with the value of his work performed. It is also required for keeping a running record of the weights of cocoa beans harvested from particular blocks, and for the monthly total harvest.

When the area of each block is known and the total harvested from each area has been recorded, then, at the end of the year, the total harvested from a given section divided by the acreage of the block will give the production per acre in hundredweights or pounds as required. Comparing the current year's production with that of past years enables the planter to assess the progress of his estate.

It is the task of management to keep full records of block yields in order to pinpoint areas of falling production. Without such records no planter is capable of judging the performance in terms of yield of his various sections. Yields may range from three hundredweights to the acre to as high as half a ton to the acre. With the help of high-yielding clones developed on experimental stations from special selections, it is not impossible that maximum yields may be increased to some tons to the acre.

Even with ordinary seedling cocoa, however, backward areas can be improved once it is known which blocks are below average in yield. Special efforts at disease control may be undertaken; the soil can be analysed for deficiencies and corrected with fertilizers, or by the manipulation of shade, mulching and drainage.

The piecework pickers accompany their sacks to the fermentary, where the bags are inspected and weighed. Each picker's daily harvest is recorded in the Pickers' Book, and at the end of the month his totals are transferred to the plantation paysheets for payment at the agreed-upon price.

The total wet weight of all the cocoa harvested during a month is represented by the sum total of all the pickers' harvests as shown on the paysheets. This figure is required to find the percentage of shrinkage of the cocoa beans from green to dry. Here is an example:

	LBS.
Wet weight of cocoa beans harvested during August	*62,457*
Weight of dried beans	*23,010*
Difference, representing loss in weight	*39,447*

The percentage of shrinkage will be the difference — 39,447 — multiplied by 100 and divided by the wet weight— 62,457. In this case, it works out at 63.15%. Normal shrinkages range from 62% to 65%.

Some years ago on the New Zealand Reparation Estates (now the Western Samoa Trust Estates), their largest cocoa plantation was divided into seven stations, each of about 400 acres. During the main harvest, which commenced in November, the head station office would prepare from the Pickers' Book at the end of each week, a column graph. This showed the total amount of cocoa harvested during the previous week on each section.

Prepared on graph paper, the columns, which resembled red thermometers, rose according to the amounts picked. Lines at the sides indicated the points to which the red column would have to rise before a section harvested four, five or six hundredweights to the acre.

Considerable competition developed between the sections as each endeavoured to be the first to reach the various target marks. The graph, too, was interesting to the management because it gave, at a glance, harvesting information on all sections.

Trainees Build Cutters For Fisheries Course

(Continued from page 29)

On my way back to headquarters I visited Papua and New Guinea, where I was able to meet Mr. M. Stuart-Fox, marine biologist, and Mr. Rod Bucknel, fresh-water biologist, both of whom have recently been appointed to the Department of Stock and Fisheries of the territory.

Mr. Stuart-Fox is, among other things, in charge of oyster culture in Milne Bay, where it has been found that quantities of oyster spat settle on artificial collectors, and growth is most satisfactory.

Mr. Bucknel is stationed at Mount Hagen in the Highlands, where there is an experimental fish culture station with several fishponds. Here, introduced Singapore carp are growing well, reaching lengths of 17", and are reproducing. More than 400 fingerlings have been counted. The Cantonese carp introduced last year from Netherlands New Guinea are also growing and reproducing well, the largest being 14" in length.

Growth of natural fish food in the ponds is now being stimulated by the effluent from a piggery built nearby for the purpose.

Above: Mat making, an important activity in the lives of Aitutaki women. Right: Food safe and cupboard made by the women in the carpentry class. Miss Hopkirk at extreme left.

Women's Clubs On Aitutaki Make Steady Progress

At the close of a meeting of the leading Women's Club on Aitutaki, the women's interests officer for the Island looks back in retrospect at progress made during the first year of her work.

By MARY HOPKIRK

THE last speeches had been made, the vesper sung, the lingering visitors were departing, and with a grateful sigh the Club members sat down to the remainder of an excellent afternoon tea. For a while I sat with them and we chatted about the success of the afternoon's programme. Then gradually talk came round to more general things—homes, children and food. This was the leading Club on the island, and the afternoon just completed had been a good one.

Enthusiastic singing had opened proceedings. Lately, a European friend had spent a number of afternoons with members teaching them English songs, and so with a mixture of English and Maori they now have a large repertoire.

The official meeting opened with a prayer and hymn. Very capably the President then took over, and after a pleasant welcome to all the visitors (because this was a special Visitors' Day) the business of the meeting began.

The programme subject was "How Parents Can Help Their Children." A visiting club took part in a debate, and a District Nurse from Rarotonga spoke. Following this more serious part of the afternoon, competitions, based on Club activities over the past three months, were judged. There were stools made out of tins, purses out of pandanus, children's smocked frocks, a savoury tomato dish, and tomato jam. Finally—most important of all—afternoon tea.

The tables were laden, and again one could see the results of club programmes. There were banana cakes, sponge cakes, coconut biscuits, a tea loaf, pikelets, scones and other good things. Each member who could, using only her hot stone oven, had made her specialty. The many guests certainly appreciated the good things.

A Year's Progress

While members ate and chatted I listened, and my mind wandered. What exactly have we accomplished over this past year, I began to wonder. I heard "rau pia" and "pokea" mentioned. One of these is the leaf of a plant grown everywhere as a root crop, while the other is a weed. Both are good greens but no one had been using them as such. Because the local diet lacks many things, we have tried to persuade people to include various new plants with their meals. It is a slow process, but every now and again one discovers a family which has grown to like them.

The conversation changed, and they were on to new houses and furniture. My mind jumped, too, and I smiled to myself as I remembered the hilarious afternoons spent making cupboards of various varieties out of meat and butter boxes. Women who had never dreamt of being carpenters found they were experts with a saw, and others, with real strength behind them, could knock a nail in with a couple of blows. The men were intrigued to see their womenfolk doing such things, and there were always a few looking on when a class was in action.

The women were off again on another line of thought—clothes this time. I thought of the various sewing groups around the island. I thought of an excellent afternoon only the day before, when about fifteen women cut out frocks for their children. They were copying my samples, which were all made out of scrap material. The women had laughed when I started on my usual line about

neatness, proper finishings, and choice of colour and materials. "That is not the Maori way", they said. "Maoris want to finish frocks quickly".

Next I thought of my dear old ladies in one village, determined to learn to knit—why, I don't exactly know—but persevering despite the handicap of homemade needles.

Then the nurse's name came up and they discussed her talk. I grew warm inside as I thought of progress made in this field. The classes being taken now by the midwives and child welfare officers was something I had planned and dreamed of most of the year. Now, with a visiting nurse it was a reality.

I thought of the dance I had attended run by a village raising money to build a clinic. Along with others working on the Island I have talked clinics ever since I came. Surely the fact that they are now going up is definite proof that things are beginning to move.

* * *

There are times, though, when one wonders if the Project is really accomplishing anything; are the women of Aitutaki really any better off because of it?

Then I remember Mata, and with what pride she shows me her baby each time we meet. This is a real Project baby, fed on all the new things we have been teaching. He is fatter and fitter than any of his wee friends. . . . I remember Mii, and the thrill she got when she took me into her home to show me the cupboard and the stool we had made at the Club. Her husband, too, was so proud of her.

Above: A sewing class making children's frocks out of scrap material.

Above right: A family preparing for a gardening competition organized by Miss Hopkirk.

Right: A group working on a tevaivai (bedspread). Beautifully made, these can be seen in most homes.

Then there is the new Maori Cookery Book and the interest it is arousing among the men as well as the women. Noo stopped me in the street the other day and said, "I would like a cook book. I'm a good cook and I want to help teach my wife the new things".

Finally, I think of the young people on the island. Those sparkling eyes as I teach the Brownies how to wash dishes correctly; of Guides in camp putting into practice their rules of health and service; and of the Girls' Club, where they are so successfully planning and carrying out a very worth while programme.

When I think about these things, then I know that the Project *is* worth while. But one should never forget that progress is long and slow, and that results must not be expected too quickly.

Young banana plants infected with "bunchy top", indicated by the close bunching together of the leaves at the top. Fiji.

Controlling "Bunchy-Top" In Western Samoa

In April 1956 the occurrence in Western Samoa of "bunchy top", a virus disease of bananas, was confirmed. Its presence constituted a serious threat to a major industry of the territory, and the Department of Agriculture immediately launched the eradication campaign described in the article below.

By B. E. V. PARHAM*

THE occurence of the virus disease "bunchy top" was not suspected in Western Samoa until late in 1955, and was not confirmed and recorded until April, 1956, when the condition of plants in several plantations in the island of Upolu began to give cause for concern.[1]

The external symptoms of the disease and the internal *phloemrecrosis nigrenervosa* were more in evidence than normally seen by the writer in Fiji, but generally less than observed in Australia. The insects were actively mobile, and often seen feeding on the sap of petioles near the apex of the pseudostems. Although there was evidence of secondary infection of suckers, resulting in a wider distribution of the disease, its local occurrence in the plantations was consistent with some primary infection by vector transmission.

It has generally been considered that the banana variety grown commercially in Fiji (and in Western Samoa) is tolerant of—if not partially resistant to—this disease. Primary infection has not been considered an important factor in its spread in Fiji, where, however, careless selection of suckers from diseased stools frequently results in up to ten per cent. loss in new plantings.

This variety of banana probably belongs to the *"robusta"* group of the Cavendish clone. It is known in Fiji as "Veimama" and in Western Samoa as "fa'i-palagi". It is characterised by a taller habit, more open crown, and a more waxy cuticle in pseudostem and petioles, than is the case in the more susceptible Chinese or Cavendish variety, known locally as "fa'i fuamaulalo". This latter variety has on account of its susceptibility to this disease, almost disappeared from cultivation in both territories, and today is nowhere grown commercially in the Pacific islands.

The importance of the banana industry to Western Samoa is indicated

* Director of Agriculture, Western Samoa.

Two mature banana plants showing symptoms of "bunchy top" disease. At left, the large light-coloured leaf shows typical "burning" or discolouration of the leaf edge. At right, the leaves are bunching. Fiji.

Above: Dusting with insecticide (BHC) to kill aphids. Western Samoa.

Applying 2, 4-D weedkiller with a rod to an infected plant. Western Samoa.

by the export figures for the past five years:

Year	Cases Exported	F.O.B. Export Value (£)
1955	445,870	429,150
1956	293,979	305,000
1957	328,569	351,966
1958	884,080	1,016,692
1959	785,950	903,842

In addition, the green fruit comprises the largest single item in the everyday diet of the people. It is estimated that the equivalent of 400,000 cases is so consumed annually.

Unfortunately, other species and varieties of *Musa*, including the indigenous fa'i taemanu (*Musa banksii* var. *samoensis* Cheesm.) grow wild in many places, also the related *Heliconia bihai* is common; and the vector has been collected in various cultivated and wild aroids (*Alocasia* and *Xanthosoma*), so that it is not likely that the disease can be eradicated.

Eradication Campaign Organized

As soon as the diagnosis of the disease was confirmed early in 1956 the Government of Western Samoa immediately provided funds for the necessary field work, and the Department of Agriculture organised an eradication campaign, which is still in progress.

At that time, so far as field surveys indicated, the infected areas covered a limited sector in the Lefaga, Salamumu and Safata districts of Upolu, on the south side of the island, and involved the plantings of not more than eight villages. A few isolated cases were recorded from other districts also.

In the early stages of the eradication campaign, the methods employed in the field involved the spraying of infected and adjacent stools with Blackleaf 40 —the only available insecticide—followed later by complete eradication of the infected stools.

The nature of the disease and the methods to be employed were explained to meetings of chiefs of the villages concerned. The fact that the advanced stages of the disease result in complete loss of fruit, and in some cases in the destruction of the whole stool, convinced growers of the urgent need to check its further spread.

The co-operation of district and village authorities and most growers was generally very effective. However, some growers could not be convinced of the highly destructive nature of the disease, and when replanting areas previously cleared were careless in the selection of planting material, so that total eradication was not possible.

A Continuing Campaign

During the ensuing three years, action has continued to prevent the spread of this disease and to eradicate diseased plants. The progress of this work is briefly described as follows:

In May, 1956, the South Pacific Commission was informed of the position and, in turn, notified the presence of the disease in the territory by circular to all territories in the South Pacific Region.[2] Progress during the year was reported.[3]

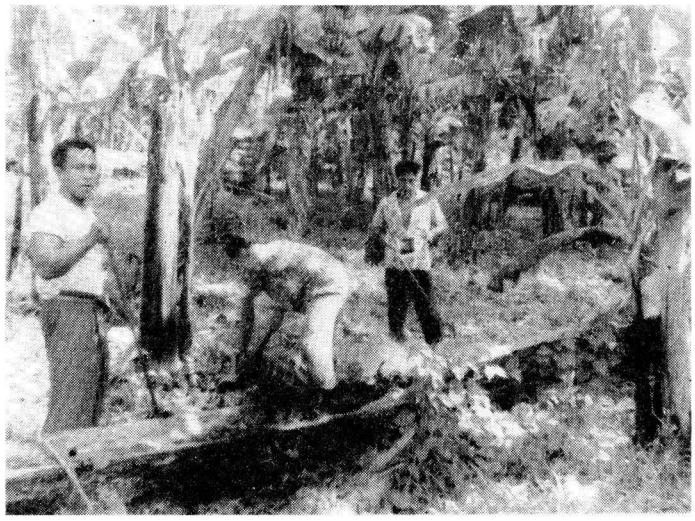
During 1957 further field work was carried out, but it became evident that the response from the public was not adequate, and could not be effective unless the campaign was supported by legislation. Submissions for the drafting and proclamation of regulations accompanied a report that "the disease has spread and may soon become a major threat to the banana industry of the territory."

The extreme difficulty of organising an efficient eradication campaign under local conditions and circumstances was fully recognised, and late in the year the following action was decided upon:

(i) Fullest possible information and propaganda measures to obtain the interest and support of district authorities and growers;

(ii) organisation of field teams under the supervision of the Agricultural Extension Service with the collaboration of the Department's entomologist. The operation in the first instance to be confined to the spraying or dusting with insecticide of all stools showing any infection, and of adjacent stools, before eradication of the former;

(iii) eradication to be effected by the digging up of the whole infected stool,



Above: Chopping up diseased stems and rhizomes. Western Samoa. Right: An eradication team at work in Western Samoa, with crowbar, stabbing iron and hand duster.

by the destruction of the growing point of all suckers by the use of a bar, or by application of a non-volatile hormone weedkiller;

(iv) introduction of regulations to control the declaration of infected areas, the movement of planting material, and to define the responsibilities of growers and the penalties for non-observance of the regulations.

Publicity was reinforced by means of visits and meetings in infected areas, by circulars, and by radio and press releases. The reception was variable, some districts agreeing to work without supervision and assistance.

During 1958 it was reported that due to lack of funds, no progress was made, and the disease spread to Samatau and Falelatai districts. Experiments with chemicals for easy eradication proved successful.[4]

Early in 1959 a Bill was drafted for submission to the Legislative Assembly. This was subsequently aproved in February as the *Bunchytop Ordinance, 1959*.[5] At that time the disease was recorded as occurring in the Upolu districts of Safata, Lefaga, Falelatai, Samatau, Tanumalala and Aleisa—the loss of crop being estimated to range from 10 to 40 per cent over almost one-third of the banana areas of the Island.

The Ordinance defined the plants susceptible to the disease, the persons to whom power was delegated for administration, the persons responsible for control action, and the extent of land occupiers' responsibility. It provided for the declaration of quarantine areas and for the weeding of plantations, and described the manner in which diseased plants must be treated.

The transfer of planting material within or from infected areas was prohibited, and the Director of Agriculture was empowered to undertake control work where necessary and to recover the cost from the landholder. The appointment of inspectors was authorised, and the powers and responsibilities of district authorities defined. Penalties under the ordinance included:

(i) Liability to fine not exceeding ten pounds for neglect to comply with the requirements of a notice lawfully served;

(ii) liability to fine of £50 or to imprisonment for a term not exceeding 6 months for obstructing or hindering the Director or any inspector.

Special measures to prevent the spread of the disease from Western Upolu to the rest of the territory were instituted early on, but during 1959 diseased plants were found in other parts of Upolu and also in one or two localities in south-east Savai'i, and the district of Fa'asaleleaga. The whole island of Upolu was proclaimed an infested area.

Several strong field teams were organised under the Department's entomologist, and, working with more effective co-operation of growers, soon covered an extensive area.

The procedure followed was for the grower/owner to ring-weed the plantation first. Then field teams employed by the Department moved in with home-made dusters and with special stabbing tools. An insecticide, BHC, was dusted on the crown of infected plants and then the base of the stems was injected with a solution of 2,4-D, 1:4. Workers using steel bars also rooted up many diseased stools, but where the terrain was very rough, with many boulders or lava, the weedkiller was most effective. (Details of progress are recorded in the Annual Reports of the Department for 1958[5] and 1959[5].)

Bunchy top virus disease control was continued throughout 1960 but a good deal remains to be done. Assistance to growers in the form of teams of men to eradicate all existing diseased plants was given in an area of approximately 30,000 acres in Safata, Lefaga, Tanumalala Leulumoega, South West Coast, Lepale and Aleisa and the incidence of infection has been markedly reduced in these areas, although failure on the part of many growers to maintain the standard by eradicating regrowths as they appeared has tended to handicap the efforts of the Department of Agriculture teams. The work done in 1960 cost approximately £4,500.

As an indication of the coverage of these teams, during February and March last, 204,147 infected stools were destroyed in 245 plantations. For this work, 26 gallons of 2,4-D and 270 pounds of BHC were required.

To assist growers in heavily-infested areas unsuitable for continued banana cultivation, the Department has promoted an active programme of propragation of seedlings and rooted cuttings of improved cocoa, coffee, cashew and other crops for distribution among planters.

At the present time plans are being made to co-ordinate the work of the field teams engaged in several field activities, viz. rhinoceros beetle control, bunchytop eradication, banana fertilizer distribution and banana leaf-spot spraying. In this way, it is hoped to economise in the cost of transport, supervision and labour.

There can be no relaxation of this work of controlling the disease, which, as originally forecast, has spread rapidly during the past few years. Constant checking of treated areas is necessary, and field surveys must be frequently made to ensure that outbreaks are found and treated at an early stage. Since the vector has several alternate wild hosts it is impossible to hope that the disease

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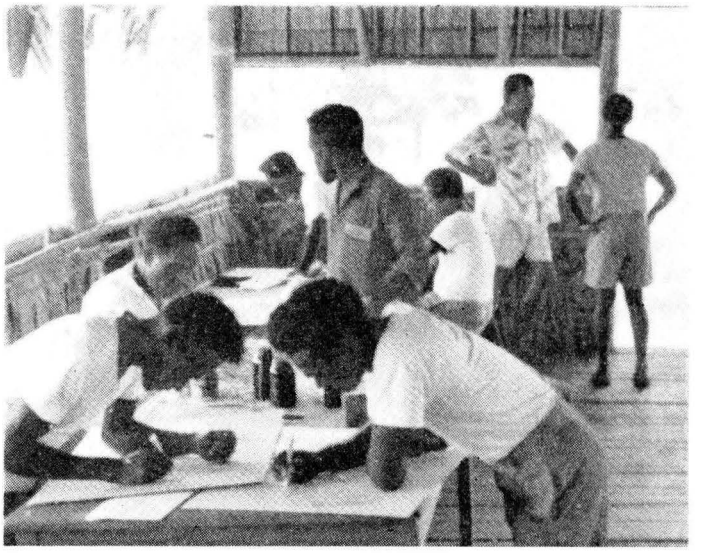


Above: A "workshop" session during a health education course held for dressers and nurses in the New Hebrides in June 1959. Right: Practical work during a similar training course for dressers held at Aimela, Malaita, in the British Solomons, in April of last year. Miss Martin collaborated in running the first Course and conducted the second.

The Real Meaning Of Health Education

Health education is not just a way of publicizing the benefits of good health; it is something much more basic. Through it, people gain a clear understanding of what good health means, and how they can obtain it. Of their own accord they become eager to work towards better health for themselves and their communities. Because it needs their spontaneous participation the process is a slow one, but in the end, results are far more effective and lasting than any that compulsion or direction could bring.

By LEONIE MARTIN*

OUR interest in health goes back very far in the history of man—as far as we have any record, and probably even before that. It is natural for us to be interested in ourselves, and how we feel, even though our scientific knowledge may be very limited. Certainly there are records revealing that sickness and health interested people hundreds and even thousands of years before the birth of Christ. Health, after all, is not something separate and apart; it is an essential part of the way that people live.

Although early interest in health was likely to have been personal, once people began to live in communities they found it necessary to work out rules for the prevention of disease and the improvement of the health of the group. One example of this is the rules for healthy living found in the code of Hammurabi, written down 1800 years before the birth of Christ. Another is to be found in the Book of Leviticus, where Moses set down for the Children of Israel during their wanderings in the desert, rules, many of which would indeed still be sound today.

In later years, closer to our own times, most governments have recognised that the health of the community is equally important with the health of individual people. So medical services, usually known as public health departments or by some similar title, have been set up everywhere.

Sometimes, because carelessness or neglect on the part of one can cause sickness to many, health departments have used laws and regulations to control what people do. Laws can be very useful in setting standards for us, and in making it harder for selfish or careless people to endanger the health of their neighbours.

But laws alone are not the answer to our problem. Laws may have to be "policed" or "enforced," and this is not the best way to build a good community. If people do not understand why laws have been made, it will perhaps mean resentment, anger, and sometimes deliberate disregard of them, if there is a chance of not being found out.

And so, just as with other advances in medical knowledge that have led to the development of special services of various kinds, education of the people in matters of health has become another part of the broad field of public health. In one sense—as a specialised study—it is among the newest of the specialties; in another, it is one of the oldest. Its recognition has come because of the need of preventive (and indeed of curative) medical services to be better understood by those they serve.

Communication is still the greatest barrier between races; it is not often recognised that it is also a barrier between individuals of the same race, and speaking the same mother tongue. The words that are spoken may have one meaning for the person who speaks them, and quite another for his audience—indeed, if his audience is a large and mixed one, many different meanings.

This is true even in doctor-patient relationships, where it is to the interest of the patient to listen so that he may recover; and of the doctor to be understood so that his treatment may be effective.

But what is understood by a word or a phrase will depend not merely on the words themselves, but on the entire background of the individual—the attitudes and beliefs of his family, his religous group, his neighbourhood, his school; the kind of education he has had; and his personality. It will be further affected by his attitude to the speaker,

* Health Education Officer, South Pacific Commission.

Tahitian mothers attending a baby welfare clinic in Papeete.

which may also depend on many factors; and by the immediate concerns that are motivating him—his state of health, economic situation, and the strength and nature of his emotional feelings.

Any or many of these factors may raise barriers that will quite effectively prevent communication between two people. Further, except in emergencies or special circumstances, it may be hard for an individual to accept blindly a certain course of action, and even with the best will in the world he may misunderstand.

The Purpose Of Health Education

Health education is a means of attempting to remove some at least of the barriers to communication, and to make the patient—whether an individual or a community—a partner rather than a passive recipient in what is being done to make him healthier.

Health education of some kind or another is implicit in any relationship between a member of the health staff and his patient, and all that the present emphasis on health education means is that we now recognise the situation more clearly and are attempting to deal with it in a realistic manner. In medical terms, our diagnosis is becoming more accurate as we recognise more of the elements in the situation; and hence our treatment may be more effective.

Hence the acceptance of the idea of health education should mean the bringing in of yet another skill to the health services, one that has perhaps been in the past more often related to the social sciences or education.

It is unfortunate that in the process of development, health education has itself created some misunderstandings, though this is probably inevitable in any form of growth.

Because health education uses the teaching tools of the educator, and the methods of mass communication such as the press and radio, or posters and pamphlets, there has been a tendency to equate it with what might more properly be termed health publicity, and to think of it in terms of the number of posters printed, or radio talks or "lectures" given.

True health education does use these tools, but uses them with understanding of both their value and their limitations, and as part only of a much wider programme. The choice of any particular method or medium must be part of the diagnostic skill of the health education worker, just as the doctor will select one or another method of treatment to suit the needs of the particular patient and the illness he is then suffering from.

Knowledge of how to work with individuals and with groups, the factors underlying human motivation and behaviour, the value of organisation within the community and how this may be achieved; all of these skills may be more effective and more basically important than the more showy ones of designing a poster or giving a well-planned lecture. The wise health educator knows how and when to select and blend his methods of attack upon the problem.

Again because of difficulties inherent in the development of any new skill, there is a tendency to think of the health educator as a person who teaches the community what to do.

Certainly this is partly true, but if we think more closely about this, it will be apparent that the most effecive health education of the community will generally be that carried out by the local health worker, be it doctor, nurse, or medical "aide." Such a person should be in a better position than others to make a diagnosis that takes into account all the factors of local belief, custom, practical difficulties, etc., and to devise ways of teaching that will not run foul of these.

For such work he needs, however, skills that are not normally taught in the training course that gives him his professional or technical competence. It is here that the professional health educator has one of his greatest contributions to make to the health team, because it is he who can give to the local worker, skills that he needs, and guidance in their application. He should of course have the further duty of overall planning and advising on the total health education programme for the health services, so that the best use is made of available resources.

In this kind of sense, the health educator therefore does not actually engage in health education of the people—or if he does, it is on particular occasions when he is demonstrating to his fellow-

Miss Martin with a group of teachers from Araura School, Aitutaki, Cook Group, learning to make posters and puppets for health teaching.

Above: Assistant Medical Officer Nasome and group inspecting water drums for mosquito larvae, Kilusqualo village, Malaita, British Solomon Islands. Right: Nursing aide explaining a point about baby's diet to a Papuan mother. Netherlands New Guinea.

workers or for some other similar reason. He should provide not so much a service to the public as a service to and through his fellow team members. It should be his function to enlarge and enrich their contribution to the health education programme through his skills in planning, in teaching them, and in helping them to diagnose and treat properly in health education matters.

There are of course certain exceptions to these functions. In many cases, especially where there is a small organisation, and where the health educator is also professionally skilled, he may in fact engage in direct health education of the public. In other instances, some countries have thought it wise to train "health education aides" whose only function in a local area has been to do health education.

The needs of every country vary, and no set pattern can be laid down, but the general principles remain.

Health Education Of Children Important

As well as the members of the health staff, there are others who can play an important part in a well-planned health education effort. Children are an integral part of the community, and are at a receptive stage of development. What they are taught now in school may lay the foundations for their later actions as adults, and hence it is axiomatic that health education be part of the school programme.

Here, teachers, rather than health staff, are the main vehicles of health education. Their contribution lies not merely in the health instruction that they give in the classroom, but also in the daily example that they set; and in their co-operation with, and use of the services provided by the health department. Their influence on the environment of the school may also be important.

School doctor, school nurse, and school teacher, together form a team where again the services of the health educator are an important resource.

Other Workers Who Can Help

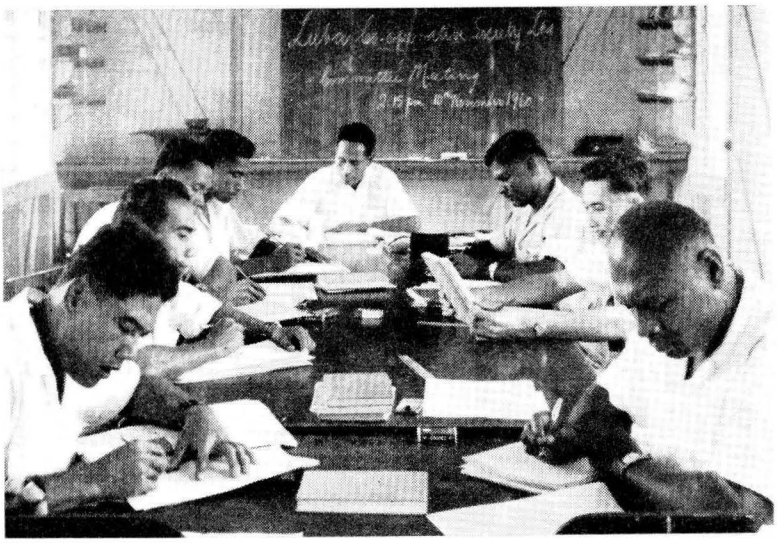
Nor should one omit to mention workers in other fields, whose influence can help to bring about better health conditions. Agricultural extension workers are an excellent example of this. Better food can mean better health; better agricultural methods may not only result in better food but in themselves may also reduce, for example, the breeding of flies and so decrease the chances of transmission of disease.

And last but by no means least, we have what may be referred to as "citizen

(Continued on page 47)

Because they are being trained to understand and prefer healthier ways of living, school children today in many Pacific territories will enjoy far happier and healthier lives than their forbears. Here senior pupils of Ngatanglia School, Rarotonga, perform a drum dance on Parents' Day.

Training Courses For Co-operative Officers In Fiji



Two identical training courses in the principles and practice of co-operative law were held in Suva for Fijian co-operative officers last October-December by the Commission's co-operatives officer, who prepared the article below.

By R. H. BOYAN

Students were given practice in the holding of committee meetings, and each was required to keep minutes in the correct form.

COLLABORATION between the Fiji Government and the South Pacific Commission enabled fifteen co-operative officers and employees to study co-operative law, principles and practice at Suva recently. Assistance for this purpose had been sought by the Registrar of Co-operative Societies, Mr. F. E. M. Warner, who desired that his staff members become better equipped to handle their day-by-day duties. Following an official request the Commission made available for ten weeks the services of its Co-operatives Officer, for the conduct of two parallel courses.

The first Course was attended by one co-operative inspector and five assistant co-operative inspectors of the staff of the Department of Co-operatives and two supervisors employed under the Audit and Supervision Fund. This latter fund is made up of contributions of registered co-operative societies and unregistered groups and is administered by the Registrar. The purpose is to employ supervisors who will relieve the official staff of much of the work of audit and supervision. The second Course was attended by the remaining six members of the inspectorial staff and the manager of the Rotuma Co-operative Union.

Varying Origins Of Students

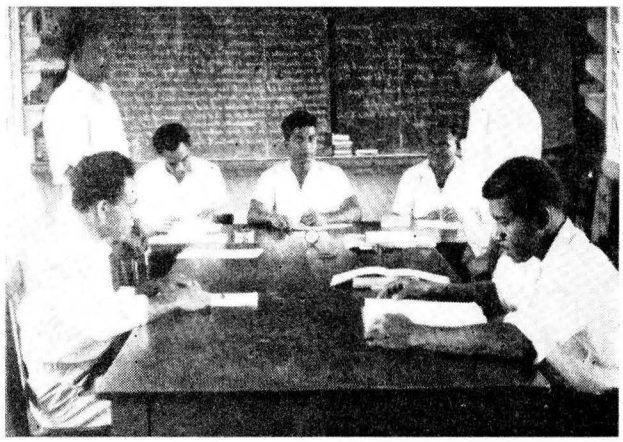
An interesting feature of the courses was the varying origins of the students. Only six were true Fijians. Two were Fijian-born Indians, three Rotumans, one an Ellice Islander, one a Tongan and the remaining two were Ocean Islanders now domiciled at Rabi Island in the Fiji Group.

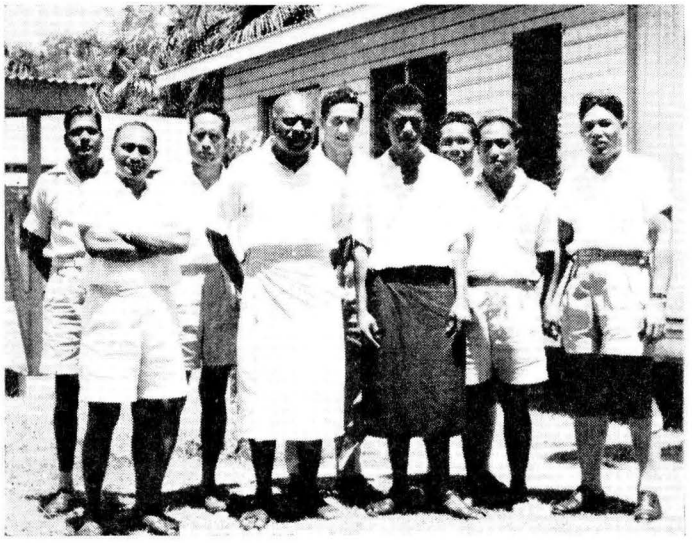
Each of the two Courses occupied four weeks, the syllabus being decided on by consultation between the Registrar and myself. The greater part was taken up with a close study of co-operative law. This involved a close examination of co-operative principles and some review of practical examples of the results of strictly following—or departing from—co-operative principles.

Instead of acting solely as a lecturer, I assumed the role of class leader, explaining, inviting and asking questions, and stimulating discussions. Practical work took the form of mock general meetings and committee meetings and mock arbitration proceedings at which imagined disputes were dealt with.

However, the need to study was emphasised by the holding each Saturday morning of tests on the week's work, and the holding of a final examination at the end of each Course.

Below: A Saturday morning test. Right: Arbitration proceedings must follow court procedure as far as possible. Here a witness is being cross-examined during the hearing of an imaginary dispute, details being given on the blackboard. The three arbitrators are seated at the top table.





Students who attended the first course were (left to right): Shew Prasad, J. T. Fonmanu (transferred to second course), Rupeni Viliame, Sakanasa R., R. Fonmoa, Manueli, Samiuela H., Taukatea F., and Mafalu S.

Students who attended the second course were (left to right): J. T. Fonmanu, S. Butadroka, M. A. Lutu, Bangaru Naidu, Tekosi Rotan, G. T. Bukarau and Sefeti.

The Meaning Of Health Education

(Continued from page 45)

groups" and "voluntary organisations."

Local councils, Red Cross and other similar organisations, women's committees, etc., often contain the leaders of a community. Their influence on their own people can be very great, and they are generally very willing to use this influence to promote better health provided they themselves clearly understand what is required.

Working together with the paid staff of the various departments, and with proper guidance, they can be an effective vehicle for health education of the community at large.

Health Education Implies Self-Help

Health education, then, is a means whereby people may be given enough understanding of health matters, and of the part they themselves may take, that they will be able to make decisions about their own health based on a sound understanding of all that is involved; that they will be able to make intelligent use of the services that are provided; that they will understand and appreciate the importance of good health, and of the necessity for preventive measures, and that they will of their own accord, because of their increased understanding, be motivated to work towards better health for themselves, their families and their community.

Hence it also implies self-help. Because it requires the active participation of the people it will be slower in becoming effective, but its results will in the end become more effective and longer-lasting than any compulsion or direction could ever give.

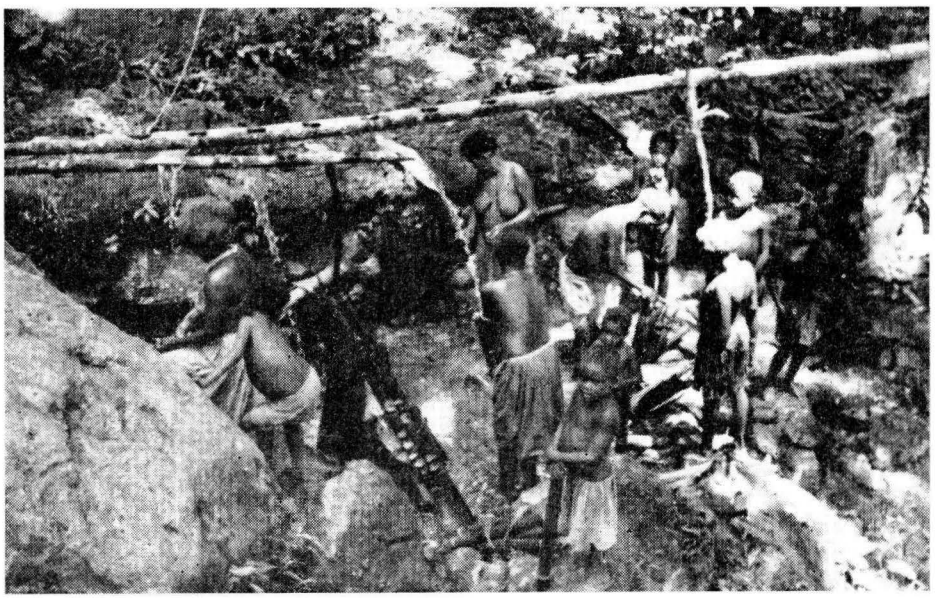
Main Pacific Problems

In preventive medicine in the Pacific, the most important problems are nutrition, maternal and child health, environmental sanitation, and the control of endemic and epidemic communicable disease.

To these we might add the problem of mental health, which may not be particularly apparent now, but will become of increasing importance with the progressive change from a subsistence to a money economy, from close-knit village community life to the drift away from the village and the family in order to find work, from the known (even though the guideposts might be magical) to the unknown where half-learning makes for greater fears, from a secure place in the community to an unequal struggle for equality.

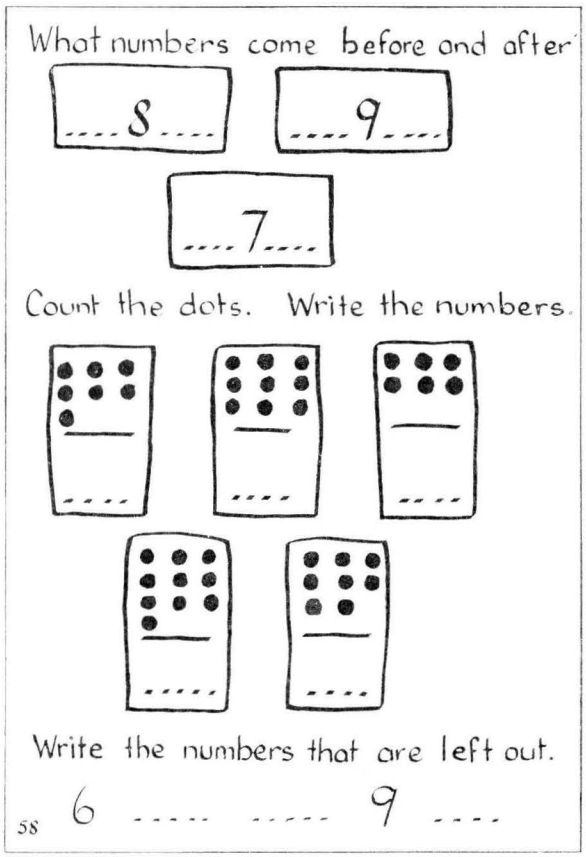
In all of these fields, it is human belief and behaviour that will finally decide whether or not change occurs, and what this change will be. Unless people give a greater value to health, and unless they will carry out better health practices for themselves, without compulsion, it will be impossible to achieve very much. It is hard to see how any administration could produce an effective

(Continued on page 64)

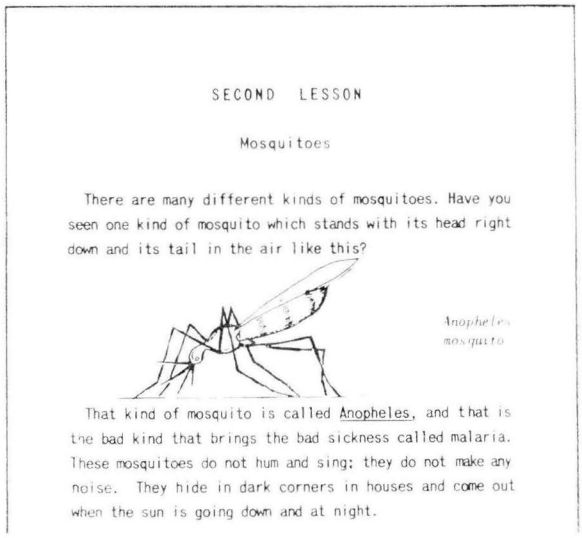


After their local health inspector had explained to them that water taken from wells near their village could make them and their children sick, these mothers began to walk two miles daily to collect pure water piped in bamboos from a hillside spring. Malaita, British Solomon Islands.

SPC Literature Production Training Centre . . *THE FIRST YEAR*



A page from "NUMBER FUN", an arithmetic book for beginners, printed at the Centre.



Right: Part of a page from "MOSQUITOES AND MALARIA"—a book for school children.

Twelve trainees from six Pacific territories recently completed the first one-year course to be held at the South Pacific Commission's Literature Production Training Centre, which was opened in Honiara, in the British Solomon Islands, in February 1960. The results achieved are assessed in the article below.

By BRUCE ROBERTS*

IN February 1960 the Commission opened its Literature Production Training Centre in Honiara, British Solomon Islands Protectorate. The reasons for the establishment of this Centre, and the objectives which the Commission hoped to achieve, were described in an article in the *South Pacific Bulletin* for April 1960.

In brief, most territories in the Pacific need a large variety of printed materials, but almost always in small quantities. The main difficulty is that the economics of modern printing are based on the production of large quantities of material, which territories seldom need. It appeared that the modern small offset press would provide much of the answer to the problem. The Commission, therefore, with the aid of UNESCO and the British Solomon Islands Protectorate Government, established its Centre, with a twofold purpose:

(i) To find out how far this type of equipment could in fact meet the needs;

(ii) to provide training in its use for men sponsored by governments and other organisations in the South Pacific.

The Centre accepts twelve trainees at a time from the islands and gives them a one-year course. There will be three such courses. The first was attended by trainees from the Cook Islands, Western Samoa, Fiji, Papua and New Guinea, the British Solomon Islands, and the United States Trust Territory.

Now that the first year's course has been completed, it is possible to make an initial assessment of the work.

The Printing Office

A special building to house the equipment was provided by the British Solomons Government. All printing is affected by changes in humidity—offset printing perhaps more so than other kinds. Another thing which adversely affects printing is dust. Thus, there is a special problem in the tropics. In hot places where the wind blows steadily and roads are often not sealed, if windows and doors are left open to secure good ventilation the building is bound to be dusty.

Two other problems were also considered when we were thinking about the building, namely, the problem of deterioration of machinery through rust under humid tropic conditions, and the problem of excessive perspiration affecting the sensitized material used in offset printing. For all these reasons it was decided to air-condition the printing office.

We had to choose between using a large single unit to blow conditioned air through ducts to various parts of the building, and a number of smaller room conditioners fixed at appropriate points. We decided on the latter, mainly because if a single unit were to break down there would be no air conditioning—a serious matter in isolated places where professional servicing is difficult to obtain. On the other hand, if one has a number of smaller units (we have eight of one-horsepower each) costing no more—usually less—than a single unit with ducts, it is extremely unlikely that all will go wrong at the same time. Thus, if one or even two units break down, the remainder still provide air conditioning while the faulty ones are being repaired.

This plan has worked efficiently and economically. In fact, suitable conditions of temperature and relative humidity can be maintained in the building with only

* Mr. Roberts was responsible for the setting up of the Centre in his capacity as Director of the Commission's Literature Bureau, which was established in 1952 to stimulate the supply of reading material for the Pacific Islands.

SPC SOUTH PACIFIC COMMISSION

TRANSIT QUARTERS

LITERATURE PRODUCTION TRAINING CENTRE

P. O. BOX 134

HONIARA

BRITISH SOLOMON ISLANDS PROTECTORATE

DATE

TRAINEES OF 1960-COURSE:

Fagamanu Pemerika	Western Samoa
Francis Tobe	Solomon Islands
Gabriel Foliga	Solomon Islands
Jon Koniel	New Guinea
Joseph Samuela	Cook Islands
Kojrak Caleb	Marshall Islands
Kasiano Qaduadua	Fiji
Liu Iosefa	Western Samoa
Patrick Paulisbo	Papua
Ranu Nihara	Papua
Teaurua Ariki	Cook Islands
Theodore Sigrah	Caroline Islands

An exercise in letterhead work. The original is printed in two colours—black and red.

four or five of the units working. At night or at weekends it is necessary to leave only one unit turned on to maintain suitable conditions while the printery is not in use. Moreover, it has been observed that deterioration through rust of equipment in the building is considerably less than that of similar equipment housed in a non-conditioned building.

Because air conditioning was to be installed, to ensure its most economical operation the Solomon Islands Government took particular care with the construction of the building. The walls of the printing office, which is approximately 65′ x 35′, are built of hollow concrete blocks and are lined with insulating material. The ceiling is similarly treated, while the floor is of concrete surfaced with rubber tiles. The building is aligned so that the sun passes over its long axis, while all windows are of double glass, with a substantial air space between.

There is no doubt that the care thus exercised in the construction of this building has contributed very greatly to the efficiency and economy of the air conditioning.

The Equipment

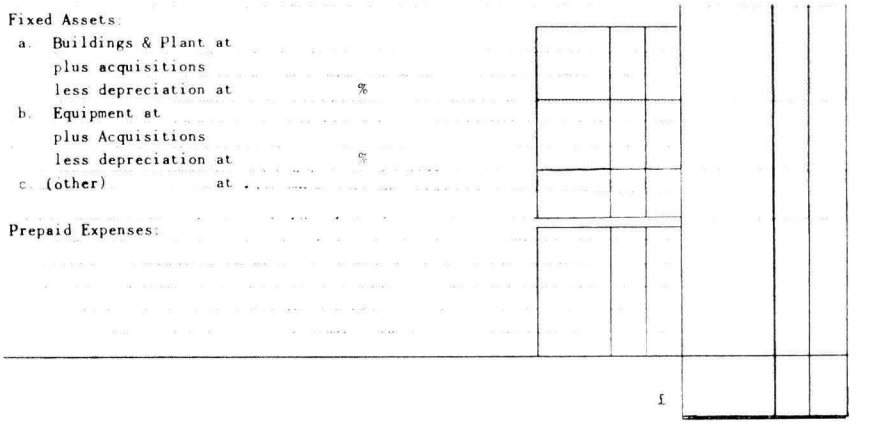
The equipment at the Centre was purposely selected on the smallest and simplest scale. When money and skilled staff are plentiful it is easy to install elaborate equipment to meet *all* needs; but it was felt that the problem in the islands was to determine the minimum equipment needed to meet most of the needs in every island. It appeared that these were for small-size books and educational materials, forms, printed stationery, invoices, etc., reports, and simple periodicals. Many of these would need illustrating, and often simple colour would be wanted.

Accordingly, our equipment consists of special kinds of electric typewriters for setting up material ready for printing (as opposed to more elaborate mechanical methods of typesetting, or the use of the very slow process of handsetting type); an inexpensive process camera for preparing plates for illustrations; a small offset press (a second press was made available to us by the Solomon Islands Government); a hand-operated rotary guillotine for trimming, etc.; and sundry small pieces of ancillary equipment. The entire plant cost under £stg.4000, including initial stocks of paper, photographic chemicals, inks, and plates, etc.

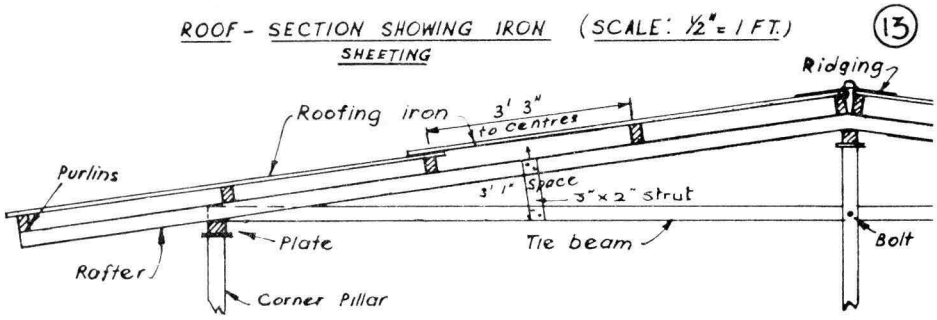
During the first year more than six hundred printing jobs were completed. While many of these were single-page forms, they also included several school books (one was a 77-page arithmetic book with illustrations on every page), numbers of bulky reports and compendiums (one running to over three hundred pages), simple posters, and some small periodicals. In several cases more than one colour was used. Thus the equipment has amply demonstrated its ability to turn out, quickly and economically, a large variety of work in small editions.

The process used has the advantage that since material is printed from very thin metal or paper plates which can be stored after use, reprints are easy to run off, and there is no problem of keeping masses of heavy and bulky metal type standing for long periods. Because reprinting is easy, it is not necessary to run more copies of a particular item than are required to meet short-term future needs.

However, such simple equipment also has limitations. The maximum size of the paper we can print on is foolscap (though, of course, larger machines could be installed if it appeared that the expense would be justified). Then again, a certain lack of variety in the appearance of the printed material is unavoidable, since electric typewriters—even the



Above: Simple things like this make good training exercises for beginners. Right: Form work provides good training in several different skills.



A diagram from the book on standard buildings for classrooms, dispensaries, copra sheds, etc., printed at the Centre for the Ysabel District Council.

special kind we use—cannot give the wide variety of type faces that one finds in the usual large printing shop (though here again it would be quite possible to install a battery of such typewriters, each having a different type face).

Lastly, it is possible that our process camera is not quite good enough (it is by far the cheapest on the market) but more experimenting is necessary to decide this.

To sum up, as a result of work done so far it is our belief that this type of plant can in fact meet a very large part of the printing requirements of a small territory, and that in a large territory it would prove most valuable auxiliary equipment. This opinion is confirmed by the experience of many very large commercial and government printing offices. However, it cannot be too strongly emphasized that the type of equipment to be installed in any printing office must be dictated by careful examination of the different kinds and quantities of work to be printed.

One other point may be made here. One sometimes gets the impression from reading advertising matter that this kind of equipment is so simple that it can be operated by quite unskilled people—in fact, that it is simply glorified duplicating. This is very misleading. Certainly much of the work is simple compared with some other printing methods, and it is not difficult to get good results from standard routine work. But to get the best out of the equipment, enabling it to achieve its maximum variety and capacity, considerable skill and experience are needed.

The Trainees

The first year's work has revealed a number of things on the training side.

Firstly, there is a considerable variation in the abilities of trainees coming from different Island territories but install a battery of such typewriters, each apparently having the same educational qualifications on paper.

Secondly, several trainees having a good command of spoken English had considerable difficulty in handling the written word—and, of course, printing is dealing with the written word all the time.

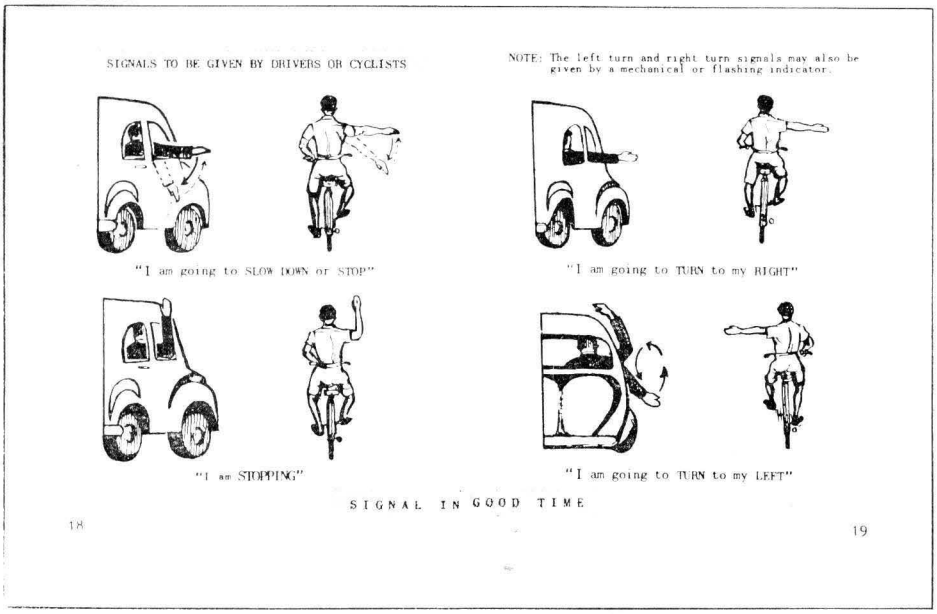
Thirdly, it has been mentioned that when printing by the offset process, for setting up the copy we do not use the metal type with which most people are familiar. The matter to be printed is typed on to plates of special paper or thin metal, which are then ready for printing. Or, if it is a form which is to be printed, the various lines have to be ruled on a plate.

Several of the trainees who came to the Centre were quite unfamiliar with the typewriter, and even if they had used one before, their ability to copy material correctly—let alone lay it out neatly—was very poor. As for ruling lines, a surprising number found it quite beyond their abilities to rule two lines parallel.

There is simply not time in one year to teach a student to use a typewriter as well as to teach him how to use a process camera and to operate the printing machines, etc. Thus, unless a student is already competent with a typewriter when he comes to the Centre he will not be able to learn much on the copy preparation side. Either the course would have to be lengthened or the training divided, enabling the trainee to specialize in one part only, e.g., printing, camera work, or copy preparation.

Perhaps the initial education, ability, and experience levels for qualification for entry should be raised. One of our biggest difficulties was the inability of some trainees (by no means all) to recognize even the most obvious and glaring errors in their own work.

Nevertheless, most of the trainees in the first year did some excellent work, and the top half of them, given further experience in a printing office, should become excellent assets to their territories. Thus the first year at the Centre has been most valuable—to the Commission as much as to the students. We have both learned much.



Two pages from the "HIGHWAY CODE" printed for the British Solomon Islands Protectorate.

Papuans And New Guineans Attend Hollandia Nautical School

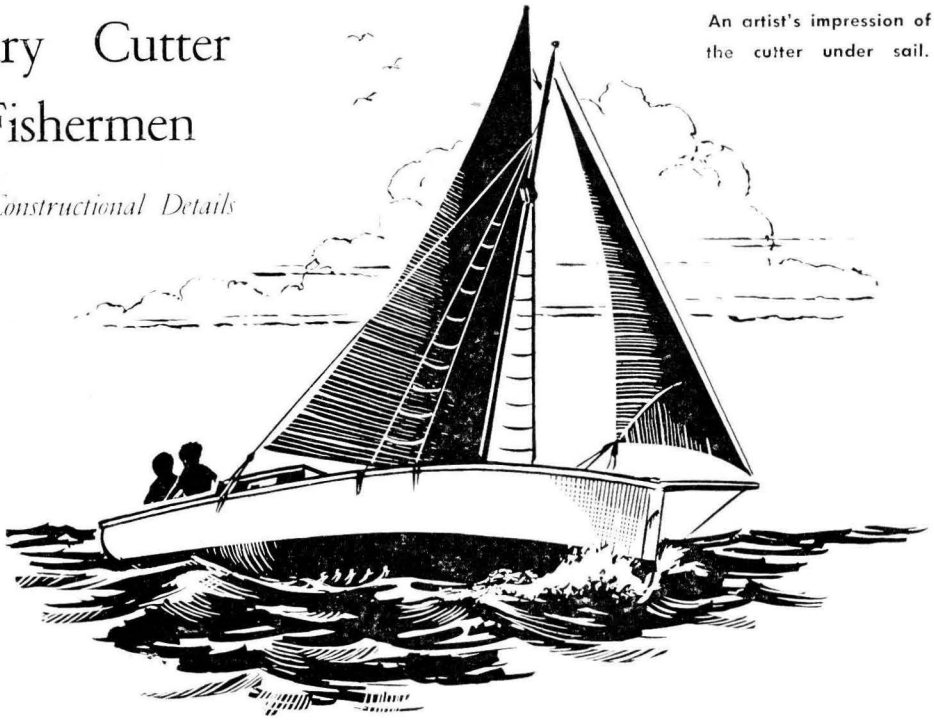
Early in April a second group of twelve Papuans and New Guineans will begin a ten-month training course at the Hollandia Nautical School in Netherlands New Guinea. Six will train as seamen and six as marine engine operators. While training is mainly practical, there is limited tuition in theory to give the students necessary background for their technical work.

Each trainee will be provided with a uniform, rations, and accommodation at the School, and will be paid at the current trainee rate of £19/10/- a year.

The first group of twelve Papuans and New Guineans to train at the School completed the course late last year, and they have now joined the crews of Administration and privately-owned ships operating in the coastal waters of Papua and New Guinea.

25-Foot Auxiliary Cutter For Pacific Fishermen

Plans Available Giving Full Constructional Details



An artist's impression of the cutter under sail.

In the BULLETIN *for October 1959, brief details were given of a 25-foot auxiliary cutter designed by a leading Australian naval architect in collaboration with the Commission's fisheries officer, for use in Pacific waters.*

Intended primarily for use as a "live-well" fishing boat, she could equally well be used for trochus fishing, carrying copra, or as a general workboat.

Complete sets of drawings are available from the SOUTH PACIFIC COMMISSION, BOX 5254, G.P.O., SYDNEY, AUSTRALIA — *price £stg.4/4/- per set, post free by surface mail.*

Each set contains five separate plans, as follows:—

NUMBER 1 . . . *gives offsets and lines for a round-bilge vessel.*

NUMBER 2 . . . *depicts the general arrangement and sail plan.*

NUMBER 3 . . . *gives details of stern, frames, stem and transom.*

NUMBER 4 . . . *shows details of the amidships section and of deck framing and rudder.*

NUMBER 5 . . . *gives offsets and lines for an identical vessel but with "vee" bottomed lines.*

Health Education Training Course For Netherlands New Guinea

The authorities in Netherlands New Guinea are actively fostering health education training of Papuan nurses and teachers, according to Miss Leonie Martin, SPC health education officer. Early in March she paid a brief visit to the territory to discuss plans with Administration officials for a health education training course she has been asked to conduct there early next year.

While in Biak and Hollandia Miss Martin visited schools, hospitals and village health services. She also inspected the new maternal and child health centre now operating near Hollandia.

Fiji Campaign Against TB Nearing End

A Colony-wide campaign against tuberculosis in Fiji, waged in the past two years by the Medical Department, is nearing its end. To date teams have examined 82,000 children and young adults in a drive to test, and if necessary inoculate with BCG vaccine, everybody in Fiji from birth to twenty years of age. With the exception of the Suva district, where the teams are now operating, practically the whole of the Colony has been covered.

1960 Loans For Fijian Ventures Total £182,000

Loans approved last year by the Fijian Development Fund Board to help Fijians in various ventures totalled £182,000. They included £92,000 for 186 new houses, £9,000 for vessels, and £8,000 for schools. Nearly £4,000 was loaned to 42 applicants to buy outboard engines. These loans are financed from cess on Fijian copra production. Since 1952, £1,420,870 has been collected and £1,001,184 loaned for various purposes.

The Fijian Development Fund Board is trying to encourage the use of hot-air copra driers by arranging for the supply of parts for building a cheap, easily-assembled standard model.

Book-keeping Course For New Britain Storekeepers

A course of five evening classes in simple book-keeping was recently conducted by the Native Affairs Department at Vunadadir, New Britain, to assist three hundred Tolais with a financial interest in the native-owned trading stores in the area. A survey had shown that very few of them had any knowledge of book-keeping methods. Sixty Tolais enrolled for the course, and all sixty attended each class.

Trial Shipment Of Fiji Coffee For New Zealand

New Zealand coffee experts found that the quality of a trial shipment of Arabica coffee sent there recently from Fiji was surprisingly good. They valued the test consignment at £250 per ton c. & f. Auckland, and considered that proper drying and grading would have probably increased the value to around £300 per ton.

Arabica coffee was once widely grown in Fiji, but a serious rust disease ruined the industry. The Department of Agriculture has in recent years introduced the disease - resistant and hardier Robusta coffee, and a fair area is now coming into bearing. A test shipment will be sent to New Zealand later this year.

Robusta coffee does not command as high a price as Arabica—it is usually sold for £60 to £100 per ton less. However, the crop is heavier and the yield per acre higher, factors which can more than make up for the difference in price. As well, Robusta coffee can be harvested in one crop instead of the two or three pickings necessary for the Arabica variety.

Above: Rally members enjoying one of the six lectures which were given on a wide range of topics, all related to "The Community". Right: The thirty-eight young people who attended the Rally came from nearly every village on Rarotonga, and from a variety of occupations.

Youth Rally On Rarotonga

Thirty-eight young people of widely-varied occupations recently attended a Youth Rally on Rarotonga. Theme of the one-week programme was "The Community".

By BEVERLEY HOLLAND*

TWENTY per cent of the population of the Cook Islands is between fifteen and twenty-five years of age. On Rarotonga alone, there are nearly 2,000 young people out of a population of 7,000.

In 1958 the Legislative Assembly suggested that some kind of Youth Conference be held to give the youth of the Group a chance to discuss the problems affecting themselves and the Cook Islands in general. As a preliminary to a full-scale conference with delegates from nearly every one of the fifteen islands of the Cook Group, the Social Development Department called together a committee of eight young people and helped them organize a Rarotonga Youth Rally.

Three months of planning and preparation went into the arrangements. At first there was not much interest, but as the plan became clearer the enthusiasm grew. In fact it was soon obvious that all the suggestions offered could not be used in the week's programme.

"The Community"

The subject finally chosen was "The Community". Six well-informed Maoris —five men and one woman—were asked to speak. Raitia Tepuretu, an authority on Polynesian legends and history, spoke about titles and early customs; Raui Pokoati, from the Agriculture Department, spoke on the land and its best use; Mrs. T. Morgan and Temangi Moerua spoke on life in New Zealand and the problems islanders will find there; David Hosking, Headmaster of Titikaveka School, traced the history of education in the islands and then went on to discuss present-day conditions; Assistant Medical Officer Pupuke Robati spoke on the need for pure drinking water and the part it plays in the health of the people.

Some time before the Rally the lecturers prepared notes and questions which were included in a booklet given to members a few days before the opening. Members were thus better able to take part in the discussions following each lecture.

It was decided that the language of the Rally would be Maori so that no one would feel at a disadvantage during discussion time.

The Committee chose 38 young people to take part. Their selection was based on a number of qualifications:

(i) An interest in self-education;

(ii) an interest in the improvement of the community;

(iii) ability to take part in debate or discussion;

(iv) a high standard of personal conduct and good character;

(v) neatness, cleanliness and good bearing.

Apart from the Committee, there were 24 youths and 14 young women. They came from nearly every village and from a variety of jobs. There were teachers, planters, students, typists, shop assistants, nurses, dental officers, clerks and girls with home duties.

The Rally was held for one week from 2 p.m. each day. There was a break for tea at 5.30, and some form of recreation in the evening. Games, a film, a dance with items as well as a highly-successful "shipwreck" barbecue on the beach at Muri were all popular. As well, a field trip to inspect the island's water intake, a visit to the new Government ship *Moana Roa,* and a screening of *Drums Across the Lagoon*—a film about the Cook Islands—as the guests of the Resident Commissioner, made enjoyable breaks.

Discussions Followed Lectures

While in session the members listened to the speaker for the day, then divided into four groups to discuss questions and problems posed by the lecturer.

A report of the findings of each group was kept. How can we make friends with the soil? What is the aim of education for our children—to go to New Zealand or to stay here? How are we going to help pay the enormous cost of this education? Is it right for Cook Islanders to leave their homes and go to New Zealand? What part does pure

(Continued on page 64)

* Mrs. Holland is Editor of *The Cook Islands News* and *Cook Islands Review.*

Village midwives learn modern hygienic methods. Left: The instructor demonstrates how to hold and bath a baby. Right: Learning the correct way of washing hands.

Training Village Midwives In Netherlands New Guinea

Because of a serious shortage of Papuan girls available for training as health aides, several years ago the health authorities in Netherlands New Guinea decided to try the experiment of enlisting the help of the traditional native village midwives. Results have been encouraging.

By K. BIERSTEKER*

NETHERLANDS New Guinea is making a serious effort to improve the maternal and child health services available to the people of the territory. As among all primitive people, death or disability due to childbirth is common, and far too many babies die during the first few years of life.

But the problem is a difficult one. The people are scattered over wide areas of mountainous forest and jungle. They live in small hamlets with just a few families in each. Communications are by rough jungle track on which no wheeled vehicle can travel. Round the coastal area things are only slightly better. Villages can be reached by boat in the good season, and sometimes by car, but even here it is difficult to provide a continuous health service that can ensure the proper care of maternity cases or young babies.

Doctors visit the villages periodically —in the remoter areas only once a year or less—and the Dutch health sisters follow, dealing with the sick babies and giving advice. It is not possible for them to give the necessary continuing supervision, and, needless to say, they can rarely give help to women having a difficult labour.

Nurse Aides Were Trained

In 1953 a programme was started to train local girls of sufficient education as mother-child health (M.C.H.) aides[1]. Their training included not only midwifery and infant welfare but also public health and domestic sanitation, the total course lasting eighteen months. The object was to place one nurse aide in every village.

But there were limiting factors. The total number of girls coming forward for training was quite inadequate. There are at least 4,000 villages to be provided for, and the number of girls going out into the field could not keep pace with the need.

Then there was the financial factor. It costs about £300 (2,500 guilders) per annum to keep a girl in a village.

Ideally the villages themselves should provide this money, but in very few places has economic development advanced sufficiently. There were also the inevitable difficulties which occur when young girls are employed—resignation due to marriage, requests for transfer to other areas, and general lack of continuity of work.

Then again, only in the more advanced villages are such girls accepted. Their youth is a big handicap. In the more backward areas mothers were unwilling to trust themselves to such young girls, who had never even had babies of their own. And even where people were advanced enough to recognise and appreciate the help they could get from a properly-trained nurse of this sort, the personality of the girl herself might be at fault and nullify her efforts to gain the people's confidence.

Help Of Village Midwives Sought

After five years of experience the Dutch health authorities realized that something more was needed. The decision was taken to try the experiment of enlisting the help of the traditional native village midwives themselves. Previously they had been regarded by the authorities as unhygienic and potentially dangerous, resistant to progress and antagonistic to the Health Department's efforts in this field.

They are usually women held in great respect by the village—their word is listened to and acted on. They have the

[1] See *Quarterly Bulletin* for July 1956, p. 11, "Nursing Aids for Merauke Villages", by Dr. L. M. Veeger.

* Dr. Biersteker has been engaged in public health work in the territory since 1952, and was Chief of the M.C.H. Division from 1958-1960.

Left: Re-trained to modern methods, the village midwife sets out to answer a call carrying her new UNICEF case of equipment, given her by the Government. Above: Village midwives are taught to make do with what is available. This midwife has just boiled up her instruments in a saucepan over an open fire.

confidence of the people, and can exert a great influence for good or for evil.

How much better it would be to enlist the help of these women. It seemed that if their influence could be used on the side of the health authorities, great progress might be made. Another big advantage would be the financial one, for these women would not be paid by the state and would continue to receive gifts in cash or kind as had been customary before.

Training The Local Midwives

It was therefore decided to offer special training courses to these village midwives in the hope that at least some of the Western views on hygiene might come to be used by them and be passed on to the mothers in their care.

Experiments in suitable training began in the Inanwatan district. From the first it was decided that it was important that the women to be trained must be selected by their own village, to ensure that they were women in whom the villagers placed their trust.

The district villages were visited by the regional medical officer and the plan was explained to the people, and eventually two or three women from each village were nominated.

In June, 1959, a training team consisting of Dr. A. W. Voors, Chief of the Division of Health Education, and Miss G. B. Bartels, Chief Nurse of the Maternal and Child Health Division, and myself arrived in the Inanwatan district and began to plan the first course. Two principles guided us: firstly, the course must be short, and secondly, it must be to the point; that is to say, it must contain *only* the practical instructions really necessary for improving the work of these women.

Defining The Essentials

It was first necessary to analyse the essentials of what was desirable for childbirth and child care in these circumstances. It was surprising how few these were when, by a process of elimination, we had sorted out the essential points from the non-essential. Briefly, the points we decided on were:

(i) Nutrition of the expectant mother, what she should eat to keep herself and her baby healthy. This has to be discussed in the light of existing food taboos and food availability.

(ii) The actual delivery. Each village is provided with a UNICEF kit containing the minimum of instruments and drugs. The women have to be instructed in how to use this. The chief points here are: non-interference, clean hands and boiled instruments.

(iii) First-aid in emergency or difficult cases, e.g., malpresentation, haemorrhage and asphyxia of the newborn. This is mostly what *not* to do, rather than what to do, since we wish to discourage too much interference. We had the impression that much of the birth injuries were due to "over-enthusiastic" practices for dangers which were more often imagined than real.

(iv) The care of babies and young children, their normal requirements and simple treatments in case of illness.

(v) Registration of births and infant or maternal deaths.

The first course was arranged in a conveniently-central village, and instruction given in the same sort of surroundings as the women would have to work in. Every effort was made to avoid any "hospital atmosphere", or to insist on standards that would clearly be either difficult or impossible to achieve in the mothers' own homes. We ourselves learned in this way a good deal of what was practicable and what was not.

All teaching was done in a *practical* way, using the actual kit to be provided, and real mothers. UNICEF kindly provided a "phantom" model of transparent plastic, and life-size charts, for teaching the process of birth, which have also been most useful.

Judging The Results

Six and twelve months after the first course I revisited Inanwatan and saw that the women we had trained enjoyed great prestige.

They had been attending almost every delivery since their return, and had faithfully been distributing iron tablets to expectant mothers as instructed (to counteract anaemia of pregnancy which is so common). They were also being consulted regularly about sick infants, and had been giving the anti-malaria treatment provided by us.

In two villages the women had extended their interests to include the school children, and had started school lunches consisting of bean soup (*kadjang idjoe*, green grams).

Encouraged by this, we decided to conduct further courses along the same

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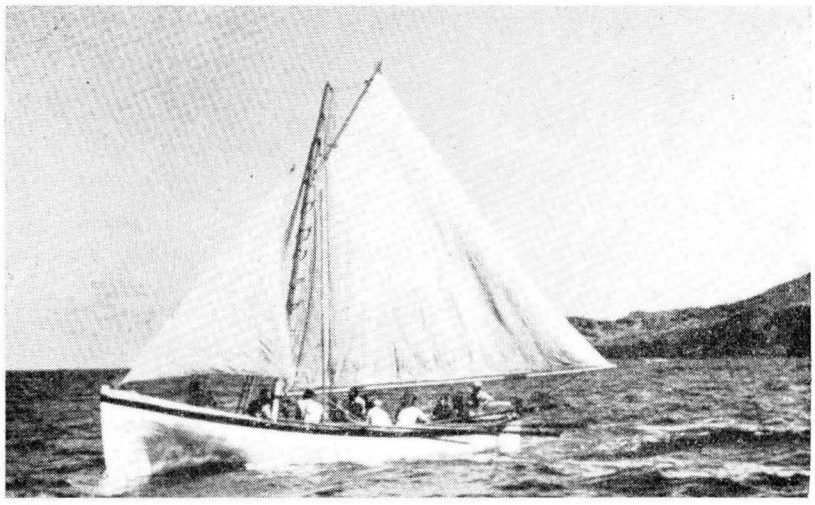
Pitcairn Island Is Catching Up

Lying roughly 1400 miles east-south-east of Tahiti and 3,300 miles east-by-south of Suva, where its administrative headquarters are located, is the tiny volcanic island of Pitcairn. In the following article the author, who recently spent two years there as Education Officer, describes how the people live and are progressing steadily towards a more modern way of life.



A cutter from Pitcairn sailing out to meet one of the ships that call infrequently at the island.

By E. SCHUBERT

FOR years before my recent stay there, Pitcairn Island, the hideout and home of nine of the famous *Bounty* mutineers, had greatly interested me, and I had read everything I could find about it. Unfortunately there was very little that was either up-to-date or authentic. The best and latest book was *The Story of Pitcairn Island,* printed in 1892. It was written by an Islander, Rosalind Young.

Such out-of-date material did not satisfy my interest, however, so when in 1957 I saw an advertisement for an Education Officer for that very Island I wasted little time in submitting an application for the post. Little did I think, of course, that I would be fortunate enough to be chosen to fill the position for the next two years, but the unexpected *does* happen, and to me it did, this time. In January 1958, with my wife and son I prepared to leave my homeland of three million square miles to live for two years on Pitcairn's two square miles.

In discussion with a friend, just prior to leaving Brisbane, we both agreed that I was soon to return to the nineteenth century, as that was where we believed Pitcairn Island to be in the scope of development. How correct this assumption was remained to be seen. Another friend who had once spent some time on Pitcairn replied to my query for advice by saying, "Go and discover the place for yourself." He added further that, "It will be a thrill of a lifetime for you. You'll never regret it".

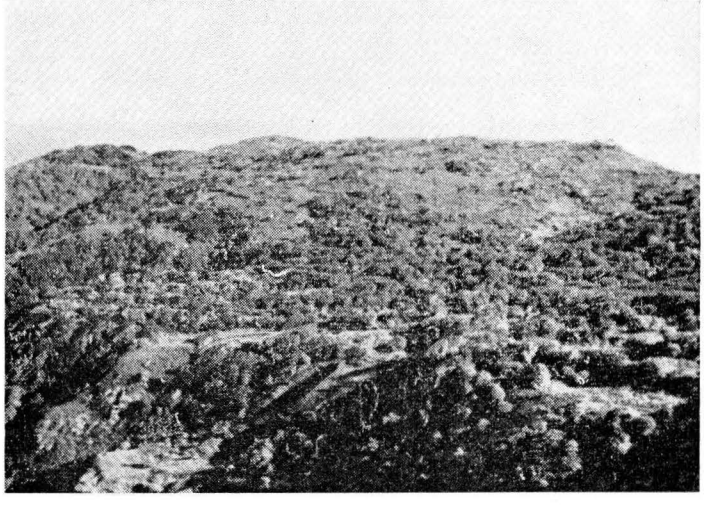
Even with such encouragement and the last-minute arrival of a *National Geographic Magazine* containing an up-to-date article on Pitcairn, I still felt that I was going on a journey into the unknown and the past.

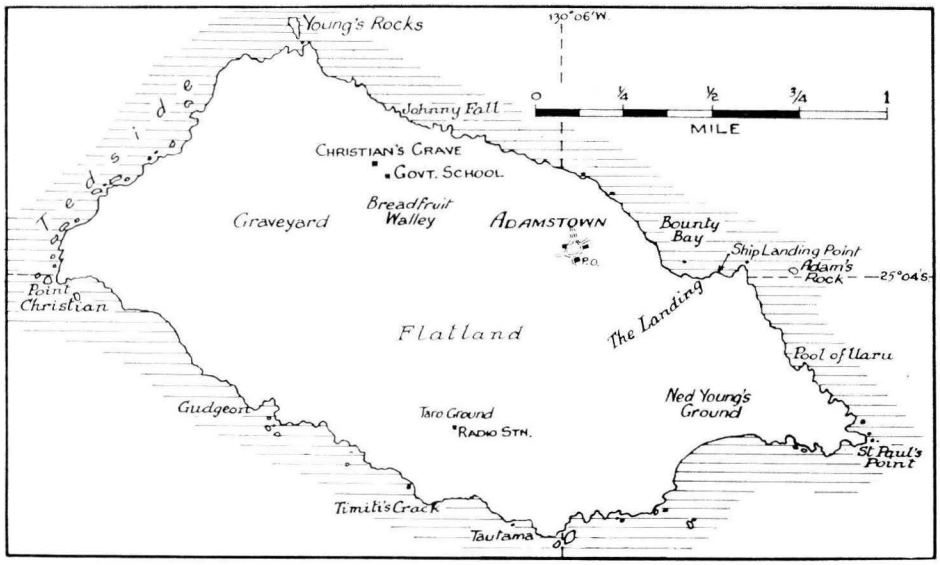
* * *

Pitcairn Island is a two square-mile volcanic outcrop situated in the South Pacific Ocean at latitude 25° 04′ south and longitude 130° 06′ west. It is nearly 1400 miles east-south-east of Tahiti and over 3,300 miles east by south of Suva, Fiji, its administrative headquarters. Captain Cartaret discovered and named it in 1767, when he crossed the Pacific in the *Swallow*. After the mutiny on the *Bounty* in 1789, nine of the mutineers with their Tahitian wives re-discovered it and made their home there. Most of the present inhabitants are in some way descended from these original settlers.

Being volcanic, Pitcairn is a rugged island with steep cliffs around most of its perimeter. Many of the cliffs are capped with volcanic ash and tuff, the highest rising to an almost sheer 1,100 feet. There is only one small and nearly inaccessible beach, so landing is difficult. The safest landing place is at Bounty

Below: The island from the south east, with the early-morning sun shining on the cliffs. Right: An inland view. There are small garden plots on the far slope.





Above: Map of Pitcairn Island.

Bay, a small cove on the north-east side of the island.

Running down to the sea on all sides of the island are many eroded depressions known locally as "walleys". Most of them are too small to be listed as valleys, but to the Pitcairner born and bred on such a minute island, the term is justified. Flat and rolling land would cover nearly 500 out of Pitcairn's estimated total of 1120 acres. Most of this is highly fertile, except for a deficiency in nitrogen which has been somewhat remedied in recent years by the introduction of leguminous crops or the application of urea.

When the *Bounty* mutineers settled here in 1790 Pitcairn must have been almost completely covered with forest, but after 170 years of clearing and burning this has been reduced to a thin patch on the western tip of the island. The only certain indigenous trees are miro (*Hibiscus tiliaceus*) and rata (*Metrosideros villosa*). The former of these trees is greatly valued for making wooden souvenirs, while the latter is much used for boat and house building. The introduced plants are too numerous to mention.

Pitcairn has an equable sub-tropical climate with mean monthly temperatures varying between 77° F. in the hottest months (February and March) and 68° F. in the coolest months (July, August and September). Mean maxima vary between 83° F. and 72° F. and mean minima between 74° F. and 64° F., giving an approximate range of mean temperatures over the year of only 10° F. and an extreme variation of 20° F. The highest recorded temperature is 93° F. and the lowest 51° F. Pitcairn is therefore usually warm, rarely hot and rarely cold, with little variation from summer to winter. Humidity is relatively high, ranging between 77% and 85%.

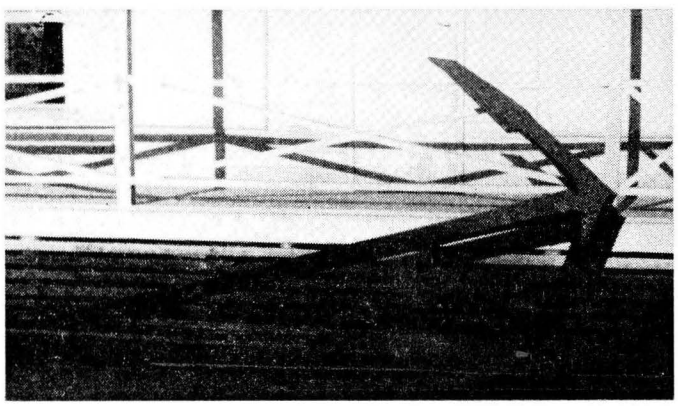
Rainfall records have not been kept long enough to give a clear average, but it seems that it would be between 60 and 80 inches per year, spread fairly evenly. Rain falls on about 100 days per year, with September and November the driest months (less than 3 inches per month). The very wet year of 1958 gave a rainfall of 103 inches.

* * *

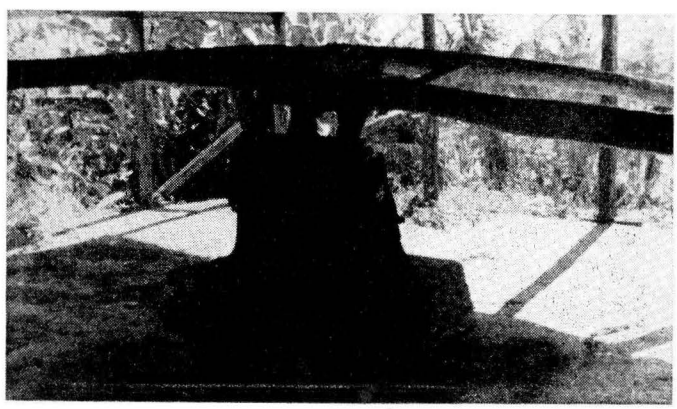
Two days before we arrived at Pitcairn I was jolted into the twentieth century by the arrival of a radiogram from the Chief Magistrate, welcoming us to the island. This established the fact of telegraphic contact with the outside world, the first link with the twentieth century. (Later I found that the radio station was built in 1944 by N.Z. military authorities and at the end of the war was handed over to the Pitcairn Island Government. It is still maintained by the Government and operated by the Islanders. Daily weather reports are relayed through Rarotonga to the New Zealand Meteorological Department at

Bounty Bay from "The Edge". The buildings with thatched roofs house the boats and fishing canoes.

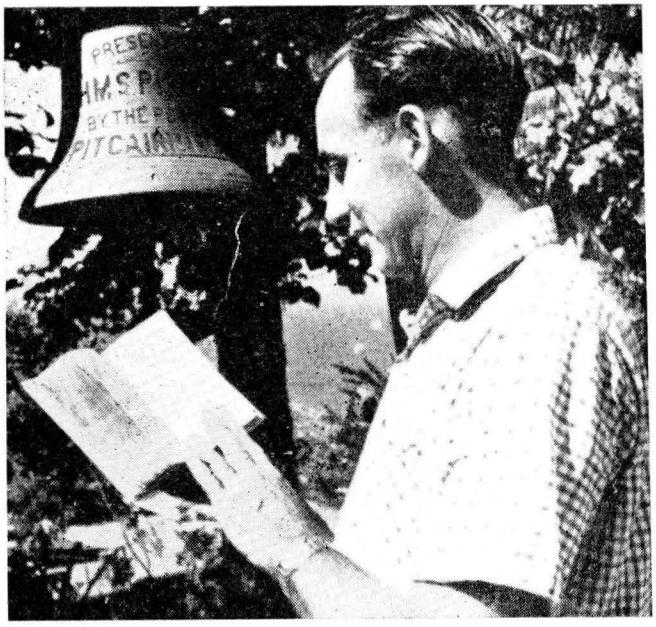
Below: Anchor of the "Bounty", found in Bounty Bay in 1957.



Right: The cane-crushing mill, which is operated by hand.



Left: Mrs. John Christian weaving a basket from pandanus palm.



Right: The resident missionary, Pastor R. E. Cobbin, reading from the "Bounty" bible in front of the village bell.

Wellington and sent to ships in the South Pacific.)

On the morning of the eighth day after sailing from Wellington we sighted Pitcairn, some twenty-five miles distant. It was only a small purple lump on the horizon, but gradually it grew higher and higher until it became the "great rock rising out of the sea" that Cartaret, its discoverer, called it in 1767.

It did not at all look inviting. As we rounded the north-western tip of the Island and moved towards Bounty Bay on the south-eastern side, three sailing boats glided gracefully out to meet our ship, the S.S. *Athenic*. Before the ship stopped completely they had moved alongside and were quickly secured by long ropes, while simultaneously fifty or sixty burly, barefooted Islanders scrambled up the Jacob's ladder with the agility of jungle creatures.

Not all of their clothing fitted well, but it all belonged to the present half of our century and most of it was good quality with plenty of colour, especially in the young men's shirts. A good half of the men wore automatic watches, a luxury not yet enjoyed by as many outsiders.

High-Pressure Salesmen

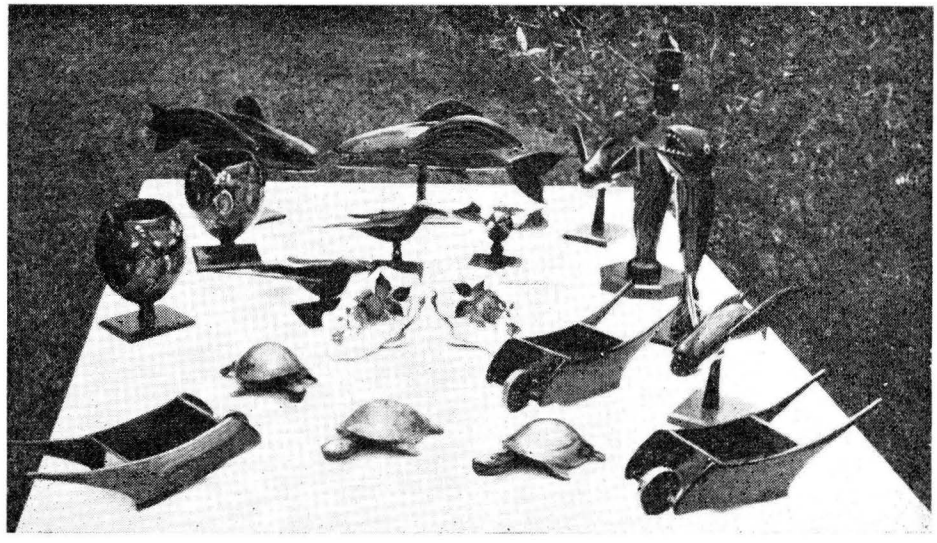
Within seconds of their arrival on deck the Islanders had their goods displayed and were briskly selling their souvenirs and fruit to the ship's passengers in a truly businesslike manner. Their souvenirs are hand-carved models of fish, birds, turtles made by the men, and baskets, hats and fans made by the women. My visions of a community where cash wasn't desired or even needed soon faded. Some made a few shillings, while others made pounds. Later I discovered that eight or ten pounds was not out of the reach of the best sales people. The women generally sold better than the men, that probably being due to the fact that women are frequently the most enthusiastic souvenir buyers.

As I left the great ship and climbed down the Jacob's ladder into a bobbing whaleboat and saw my family swung out over the ship's side in a bosun's chair and slowly lowered toward the boat, I held my breath in fear and excitement. What a relief it was when I saw them landed safely into the bobbing boat! The next and more welcome relief would be to set foot on solid ground again. After the singing of the traditional songs beside the ship's side the course for Bounty Bay was set. For the next two hours we tacked our way towards shore.

Arriving off Bounty Bay all three boat crews downed sail and brought out rowlocks and oars. After a short wait for a "good time"—as a break between the breakers is called—the order to "pull ahead" set a dozen powerful and skilled oarsmen straining at their oars. A short, swift pull brought us aground in Bounty Bay. There was no jetty or gangplank, so when a brawny pair of shoulders was offered I rode pick-a-back fashion and was soon set safely on Pitcairn's rocky shore.

Two Motorboats

When we landed I was surprised to find that Pitcairn has two motorboats. The larger—then under repair after four years of work—is powered by a 30 h.p. diesel engine and is capable of towing two of the island's whaleboats at a time. The engineers are Islanders trained by a



A display of island handcrafts. The flying fish, birds, turtles, lamp stand and wheelbarrows were all made from miro wood brought from Henderson Island 110 miles away.

Handcrafts made by Pitcairn women. Pandanus palm is the basic material for baskets, fans and hats. In the foreground are painted leaves and shells.

former missionary who was an engineer. In 1958 the Islanders built a second boat 27 feet long and installed a 12 h.p. petrol engine in it.

Small and light items of cargo were unloaded on the shoulders of the Islanders but heavy goods were landed with a manually-operated derrick which had been only recently installed. After over 160 years of hand loading and unloading this was a great step forward, and greatly appreciated, too.

When all cargo is unloaded the boats are pulled up into the boatsheds by means of a winch driven by an ancient diesel engine. In spite of much tugging, jerking and great noise, this ancient equipment did the job with much less effort than nineteenth century conditions would have required. I felt sure that this noisy contraption would pull one more boat and then fall to pieces, but two years later, when I left Pitcairn, it was still grinding out its job with only a little more noise and a little more slowly.

Already my vision of a nineteenth-century type community was breaking up, but it was to break further yet.

The village is some 250-300 ft. above sea level, and to get there we had to climb a one-in-three track to "The Edge" (as the ledge around the Island is called) and there rest. A flying-fox, built at the same time as the radio station in 1944, brought all articles of less than 400 pounds up to "The Edge".

When we walked through Adamstown, as the village is called, further evidence of progress appeared. The traditional bamboo house with thatched roof was absent, and in its place were timber homes with glass windows and galvanized iron roofs. The Church was even more modern, being of concrete bricks.

Electricity And Telephones

The village square, around which are the church, dispensary, post office and courthouse, I found had been recently cemented. All of these buildings are lit with electricity.

I later found that there were six or seven privately-owned generating plants all supplying a number of consumers, and this explained the need for the great tangle of electricity wires that criss-crossed the Island streets. Hardly a home on Pitcairn is without electricity.

A further maze of wires proved to be the telephone system, a party line connecting the whole village. Each home has its own call sign, it usually being the morse code signal for the first letter of the subscriber's name. While the type of 'phone' used is approaching museum status in more progressive countries, for Pitcairn it proved a great blessing, and far more efficient than any known form of "coconut radio".

Main Revenue From Stamp Sales

It is most fortunate for the Island that there are millions of stamp collectors in the world, for it is from the sale of stamps that the Island gets most of its Government revenue.

In 1940 the first Pitcairn Island stamps were put on sale, and they were soon in great demand. By 1948 the accumulated revenue was sufficient to build and equip a fine modern school and residence for the schoolmaster, and to pay his salary and those of minor Island officials.

Since the completion of the school in 1949 Pitcairn has had a Government-paid schoolmaster. Up until then it was always an Islander or mission teacher who controlled the school.

The school is well equipped. By the end of 1959 when my term was completed it was equipped with piano, duplicator, sewing machine, record player, typewriter, 16 mm. movie and 35 mm. slide projectors. In addition there was a good library and yearly provision for extension. None that I have seen in Australia, New Zealand or Fiji approaches this school in quality and variety of equipment for thirty pupils.

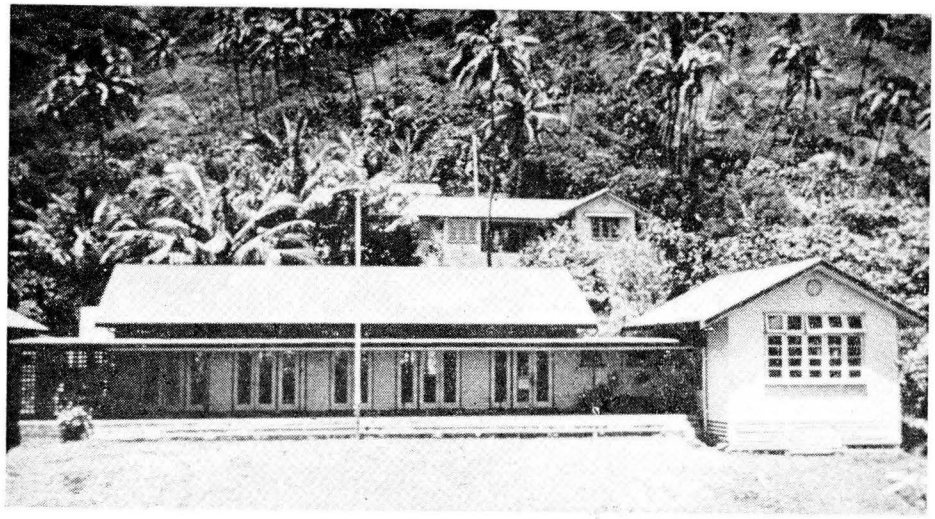
Secondary education was introduced to Pitcairn in 1957, when correspondence courses from the New Zealand Correspondence School were introduced. Three girls completed a secondary course under the supervision of the Education Officer. This was a big step forward, and each year since there have been students doing secondary courses.

Film Shows Popular

For six months prior to my arrival I had not been to the cinema, but my first night on Pitcairn changed that. It was the beginning of a run of picture screenings that helped me to catch up on the last ten years. I attended an average of three per fortnight.

Full-length feature films were not regularly screened, but at least six a year were shown. The majority were of an educational type, either from the British Council in Suva, or the Central Office of Information, London.

On Pitcairn all pictures are popular, and any that had a strong appeal were



Pitcairn's modern school, with the schoolmaster's residence in the background. Both were built in 1948-9 from revenue from the sale of Pitcairn stamps to collectors throughout the world.

screened two or three times. *Mutiny On The Bounty* was shown at least five times, and was still popular. Films surely serve as a good means of informal education on Pitcairn.

The Pitcairn Islanders are not able to indulge in the twentieth century habit of riding everywhere in a car, but still gain a little of the spirit by introducing outboard motors to drive their fishing canoes. Up until 1958 it was either sail or oar that provided the power but now sails are going mouldy in a corner while an outboard does the work.

For some of the younger men speargun fishing is the new craze. They can spear twice as many as they can hook, so its popularity is understandable.

Slow Progress In Agriculture

Agriculture on Pitcairn Island follows much the same pattern as on other South Sea islands, with major subsistence crops being mainly starchy. Sweet potatoes (kumaras in local parlance), yams, taro and breadfruit are all grown. Bananas grow wild in the valleys, while pawpaws and citrus are scattered in small patches over much of the island. Citrus grow particularly well.

Most common vegetables are now grown, with tomatoes, beans, cabbages and lettuce the most popular.

Only very small quantities of Pitcairn agricultural products are exported, most being bartered on the ships that call at the island. Bananas, oranges and pawpaws are most popular for the latter purpose. Small quantities of yams, kumaras, taro and oranges are exported to New Zealand, mostly for Islanders resident there.

In a report on the soil resources of Pitcairn Island by I. W. Twyford of the Fijian Department of Agriculture, issued in 1958, it was suggested that coffee, cacao, ginger or peanuts might be grown as a cash crop, but to date little or no attempt has been made to establish any of these. A small crop of peanuts grown in 1959 demonstrated that they would thrive there.

It will be seen that progress has been slow, but it is now known that the potential is there, and with the training of an Islander in agriculture under a Colonial Development and Welfare scheme in 1959, changes are coming and should gather momentum as prejudice and stubbornness break down.

Some of the younger and more progressive men have even begun using compost, and have trenched across their gardens on steep slopes.

Seventy-five Miles In An Open Boat

Once a year the Islanders go to Oeno, a tiny coral island 75 miles north-northwest of Pitcairn. They go mainly for coconuts and fish, but also for coral and clam shells.

This journey is made in an open boat, and usually under sail. One of the motorboats is taken along just in case the wind fails, when it can tow the other boats. In 1959 my wife, son and I went on this trip—and what a trip it was! We spent a full night at sea under the stars. All were much relieved when land was sighted the next morning. Oeno is so low that it can be seen for only eight miles, and could easily be missed.

Camp was set up on the coral sands under the coconut palms. A week was spent in fishing, gathering coral and clam shells and coconuts. The surplus fish were salted down to be used later. The coconuts hadn't been touched for more than a year, so were plentiful.

As far as I could discover, all coconuts on Oeno were planted by the Pitcairn Islanders, and within living memory. While the Pitcairn coconut palm grows long and thin and fruits very poorly, those on Oeno's coral sands grow thick trunks and are loaded with fruit. The nuts of the younger palms could be reached from the ground. It appears that even though these palms came from the same stock as those on Pitcairn, the conditions were so much better that they bore little resemblance to the parent stock.

The corals and clam shells gathered were to be sold as souvenirs on the ships that call at the island. The coral is usually dyed and the clam shells painted with a floral motif and the words "Pitcairn Island". This type of souvenir is merely a sideline, as the major cash business is from carvings and woven ware.

After ten days on this remote coral island we loaded our boats with the spoils and retraced our steps to Pitcairn, anxious to the last as to whether we'd find home. With yearly trips for half a century and never yet a failure, I had calculated the chances of survival as fairly good, and though anxious for a good many hours, wasn't disappointed.

Refrigerators And Washing Machines

As far as household goods and personal effects are concerned, Pitcairn is not backward. In every home I found at least one sewing machine, while many have refrigerators. A few have washing machines. Steam irons are common, as are radios. Cameras are not uncommon, either, but tape-recorders and projectors are limited to the fortunate three or four.

In church, the little girls wear frilly nylon frocks and sandals or shoes, while the boys prefer jeans. The adults have few if any tailor-made suits or dresses, but all have ample, good quality, clean clothing. Shoes and sandals are becoming increasingly popular.

* * *

Well, did I return to the nineteenth century when I set foot on Pitcairn? I feel sure readers will agree that Pitcairn Island is in fact catching up, and soon will be well abreast of the more progressive peoples of the Pacific.

The Secretary reading the minutes at a recent meeting.

Girls' Club Formed In Suva

Apart from church groups of young people, youth organizations are rare in the Pacific, though there is a growing interest in them. This article describing the formation and running of a girls' club in Suva shows what can be done with the aid of determination and goodwill.

By SUSAN PARKINSON

EARLY in 1960 the Pan Pacific and South East Asia Women's Association decided that the special project for the year should be the establishment of a club for Suva girls who stay at home after leaving school. At the first meeting of the Projects Committee it was agreed to carry out a survey in Suva schools to find out if young girls would be interested in joining such a club. In the questionnaire the girls were asked to write down in order of preference the subjects they were interested in. The principals of schools were also asked for information concerning the number of girls who had remained unemployed after leaving school in 1959.

Satisfactory answers were received from about 400 girls, the majority being unanimous in their desire to join a club after leaving school. The most popular subjects selected by them for a possible club programme were cooking, English, sewing, games and home decorating.

The principals reported that one-quarter of the girls leaving school each year remained unemployed. About half of these remained in Suva.

The results of the survey showed that a club would be welcomed, and there would also be sufficient potential members to make such an enterprise worth while.

Enthusiastic Public Meeting

Armed with this information, the Projects Committee arranged for a public meeting of girls and their mothers in a church hall in Toorak. This area of Suva was chosen because a large number of people with growing families live here. There are several schools in the area, and several interested principals said that they would advise "old girls" to join the club.

The meeting was attended by at least fifty enthusiastic young women and several mothers. Fortunately Miss Marjorie Stewart, Women's Interests Officer for the South Pacific Commission, was able to come to the meeting to explain the aims of a girls' club. Arrangements were made for several girls present to attend leadership training courses in club management, dancing and singing, organized by Miss Ruth Robertson, Women's Interests Officer for Fiji.

One of the first problems was to find a group of reliable assistants to run the Club. It was decided that the greatest help could probably be obtained from interested mothers who lived in the area. Accordingly, an informal meeting of mothers was held in July. A programme was arranged and volunteers were asked to come to the hall whenever possible on Club afternoons to teach sewing, knitting, crochet work, tatting, mat making and cooking. Throughout the year at least two of these capable ladies have attended each meeting.

In addition, arrangements were made for home science teachers, dietitians, trained nurses and other qualified persons to come to the Club to give special talks and demonstrations.

Organization Within The Club

During the first month an election of officers was arranged. This was not altogether a success, as some of the girls elected for positions in the committee were not suitable leaders. However, during the year the less reliable have fallen out and have been replaced by more enthusiastic and hard working members

A member demonstrates the making of an Indian sweetmeat served on special occasions.

appointed by the Mothers' Committee.

It was decided to follow this policy until such time as the girls had learnt to understand the qualities needed by a club leader.

The Programme

The Club meets every Wednesday afternoon for three hours. The afternoon programme starts with the formal meeting and collection of a 3d. subscription. Following the meeting there is a talk or demonstration, then sewing or other craft work is done under supervision. The afternoon ends with dancing, games or songs.

In the early stages the programme was planned one month in advance. Latterly it has been found more satisfactory to plan for 2-3 months ahead. This allows for greater continuity.

At first the programme was planned by the mothers as it was found that the majority of girls had little idea about what they wanted to learn. Now, the outline is drawn up by the mothers, and the girls add their suggestions. It is hoped that the Club committee will gradually take over the responsibility of arranging the programme.

During a five-week period at least two sessions are given by a professional teacher. In dressmaking, lessons started with the use of paper patterns and continued through the correct methods of sewing. During dressmaking sessions, many girls have made their Club uniform—a white blouse and black skirt.

At least once a month there has been a demonstration on flower arrangement or some other aspect of home decoration. Before Christmas, a very successful competition for a miniature decorated tree was held. Through these lessons and competitions some girls have shown considerable artistic ability. Plans are already under way for further lessons in design and colour. It is hoped that some members will learn to draw their own embroidery designs rather than depend on paper transfers.

Talks on travel and life in other lands have aroused interest, but it is not always possible to find speakers who are able to recount their experiences in sufficiently simple language. Demonstrations are always popular. Club members who have a knowledge of cooking or sewing are encouraged to help others. These young demonstrators sometimes assist the professional teachers.

A special event is arranged to take place about every six weeks. These have taken the form of a mothers' afternoon, a small entertainment for a special visitor and a picnic. These occasions provide a goal to work towards, and something to anticipate.

Development Of Initiative And Leadership

One of the most rewarding aspects of the Club has been the rapid development

of initiative and leadership among the members. In the early stages the president and secretary could hardly bring themselves to address meetings. Now the minutes are read in a clear un-selfconscious manner and the president is proving an able speaker in public. The quieter members are also beginning to come forward with new ideas and suggestions.

In planning the programme it has been found necessary to provide interests for the more retiring members. It has often been necessary to restrain the enthusiastic extroverts from forcing shy girls into dances and drama. Now, group activities are arranged to suit the temperaments of the active and the quieter members.

Membership

There are about 60 names on the roll book. Of these, 25-30 attend Wednesday afternoon meetings. One of the problems has been the irregularity of attendance. It is hoped that as time goes on, more numbers will develop a greater sense of responsibility towards their Club.

By far the greater number of members are Indian girls between the ages of 14-20 years who are assisting with domestic work at home. The Club provides a much-needed outlet for these young women.

The Fijian membership is fairly erratic. Some senior girls from a nearby school attend in term time, but seem to disappear during the holidays. A likely reason for the poorer attendance of Fijian girls is that many already belong to church groups, guides and sports clubs.

The Club has a savings bank account where the weekly subscription of 3d. per member is banked. It is hoped gradually to build up this account to buy a sewing machine.

Mothers' Afternoon Arranged

At first many parents in Toorak were very dubious about allowing their girls to join the Club. To gain their confidence a mothers' afternoon was held. A programme of songs and dances was arranged, and an exhibition of sewing and other handcrafts completed during Club sessions. This was a most successful afternoon and helped the Club to gain more friends.

On other occasions invitations have been sent to parents to attend special demonstrations and a picture evening.

* * *

Looking back on the last eight months' experience, one can say that the success of this Club may be attributed to several factors. The most important has been the continued interest and enthusiasm of eight mothers who live in Toorak. Without doubt these capable ladies have been the "backbone" of the Club.

The Women's Interests Officer has

provided valuable assistance. Two mothers have attended courses arranged by her which have helped them to guide the Club activities.

To conclude, it may be said that organizing a youth club is a hard but rewarding job. Each member requires individual understanding and assistance. This is best given by women who know the background of the girls. As a group, the Club needs tactful guidance and supervision. The responsibility for this side of the work can be taken by an outsider.

The Meaning Of Health Education

(Continued from page 47)

service unless it takes these factors into account.

It might be argued that compulsion will be easier and more effective than the slower methods of education. Compulsion may be effective at times, particularly in emergencies, but on the whole it breeds dislike and resistance, besides requiring many personnel to police it if it is to be maintained. If education can be effective, the need for inspection can be reduced to the minimum.

Compulsion can force the building of latrines, but only education can make the people use them. Government can provide immunisation clinics, can even order immunisation, but only education will ensure the people attending at the the proper times for the necessary booster shots, without a veritable army of inspectors, costing far more than the clinics themselves.

Even a programme like the yaws eradication campaign cannot succeed unless the people accept it—otherwise cases will be hidden, and even whole villages can "go bush" and escape the survey.

Health education, then, is a means of extending knowledge, of increasing the sense of "community," and of developing self-responsibility. As such, it is not merely a health service, but an instrument that will help in the total growth and knowledge of any people.

Youth Rally On Rarotonga

(Continued from page 52)

water play in our health? These were some of the questions discussed.

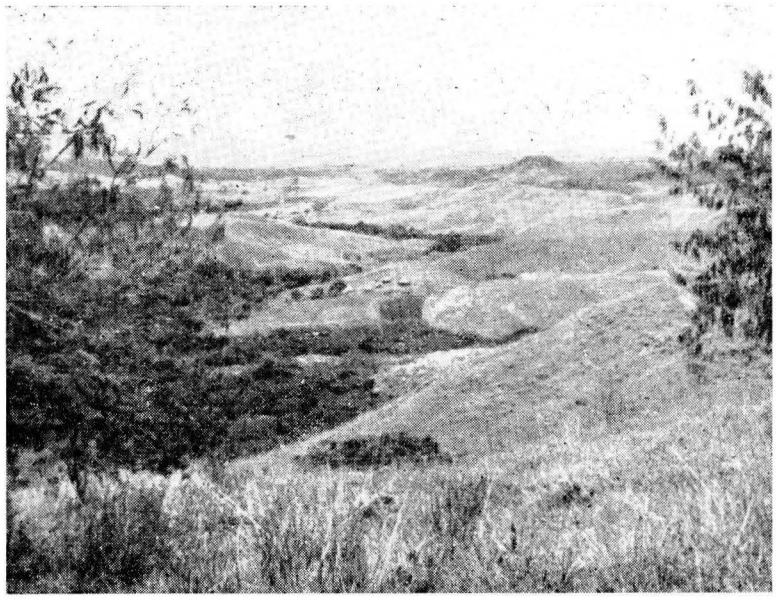
There are no simple answers, but at least over forty young Rarotongans have been made aware of them and encouraged to think about the solutions. Apart from that, they have had a chance to work together in groups and to relax together.

Their enthusiasm was so high that before closing they elected ten members as the Rarotonga Youth Council, to act as a co-ordinating body and to go into ways of raising money for the proposed Cook Islands Youth Conference. Two villages have since asked for help in forming Youth Clubs.

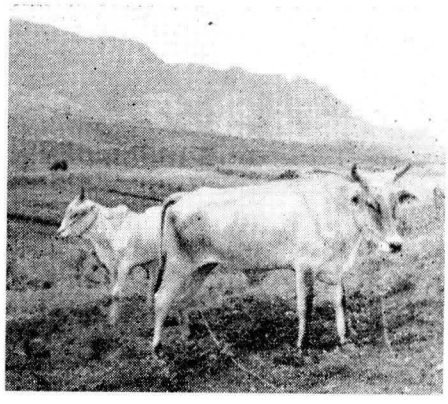
All who attended the Rally gained in some way. The organizers especially learned much that will help make a success of later youth gatherings.

A Landholding Co-operative Society

The Votua Levu Farmers' Co-operative Society Limited, which was formed in 1951, now has a membership of 42. Its primary function is to provide pasture land to graze cattle belonging to members. To this end, soon after the Society was formed it leased six hundred acres of land, which it undertook to fence and improve by the regular planting of pasture grasses.



Part of the Society's six-hundred-acre lease. Below: Type of cattle that members graze on the property.



By SHEW PRASAD*

THIS Society was formed in 1951 with a total membership of 32. The original object was to provide a farm machinery service for members, and accordingly a Ferguson tractor and disc plough were purchased.

The following year, landholding for grazing purposes was added to the objects, as the members did not have enough land to keep cattle to fulfil their needs.

Following a general meeting of the Society, an application to lease 600 acres of grazing land for a period of 30 years was made to the Native Land Trust Board. After a few months the Board approved the application, under the following main conditions:

(i) The land hereby leased for the grazing of stock shall be enclosed with good and substantial fencing so that all stock kept upon the land shall at all times be adequately fenced to the satisfaction of the lessor.

(ii) Pasture grasses shall be planted from time to time to the satisfaction of the lessor.

(iii) The lessee shall not graze more than 120 head of cattle or horses unless the whole area is covered with good pasture grasses.

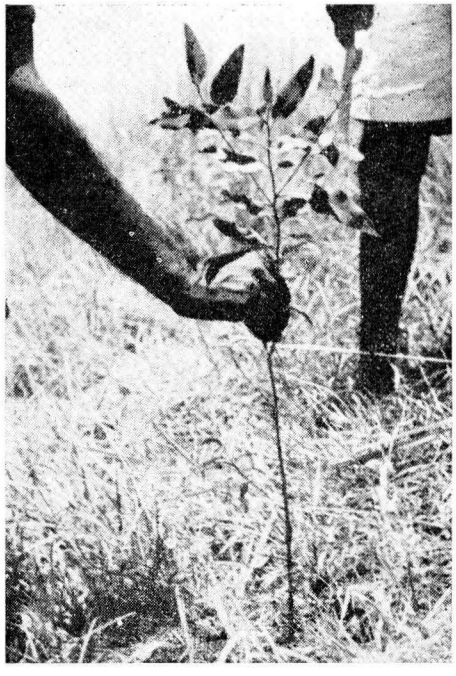
(iv) After the expiry of this term, the lessee shall have an option for another term if the conditions are fulfilled.

There are many more conditions, but only the main ones are given.

The members bought enough shares to meet the costs of first six months' rent, survey fees and fencing. All the members got together and did the fencing free of charge; the Society had only to buy barbed wire and staples.

To meet the rent due to the Native Land Trust Board, the members pay to the Society 5/- per beast for any period between January 1 to June 30, and another 5/- for the period between July 1 to December 31. The members are responsible for looking after their own cattle.

* Assistant Co-operative Inspector, Department of Co-operatives, Suva. Mr. Prasad is at present stationed at Nadi.



Left: Bamboos at 5/- per hundred are sold to members for house building by the Society from the excellent stands on the lease. Right: One of the two hundred eucalyptus seedlings planted on the lease by members early last year. The Forestry Department supplied the seedlings free of charge.

There are many bamboos growing on the land, and the Society sells these for house building to its members at a rate of 5/- per hundred.

At the Society's request, the Agriculture Department recommended and supplied Nadi Blue and Batiki Blue grass seed to sow on the grazing land in 1953. From there on the Society sows grass seed every year in the rainy season. About 200 acres have been planted in Nadi Blue and Batiki Blue grasses. The grass seed was collected and sown by the members free of charge.

The Society has also planted 200 Noko Noko (*Casuarina*) and 200 *eucalyptus robusta* trees on the grazing land early this year. The seedlings were supplied by the Forestry Department free of charge.

In 1957 the Society sold the tractor and disc plough, as the equipment was then old, and there are many tractors in neighbouring settlements available at reasonable cost to fulfil the needs of members. Since then the Society owns only the grazing land.

The Society always has sufficient income to pay the annual rent of the lease—£60—to the Native Land Trust Board. The members repair the fences free of charge.

There are now 42 members in the Society. It deals strictly with its members only, and it is functioning smoothly.

Controlling "Bunchy-Top" In Western Samoa

(Continued from page 42)

will ever be completely eradicated.

Experience to date has shown that, provided the treatment and eradication work is properly supervised, and carried out with the full co-operation of the growers, this disease can be held in check at a level which will not unduly prejudice the continued high production of bananas in the territory.

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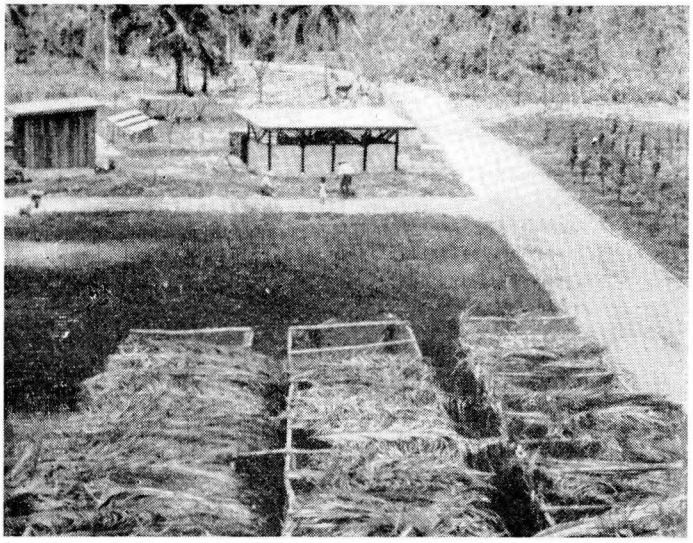
Papuan Trainee Building Inspector

A Papuan trainee building inspector, Kohu Sinaka, has been appointed to the staff of the Port Moresby Building Board. After training by senior officers, his main duties will be to inspect buildings in village areas in the township of Port Moresby, and advise home builders among his own people on the requirements of the building regulations. He will also assist them in planning improvements to existing homes and other buildings.



Two views of the experimental and demonstration farm established at Vaipapahi. New introductions are tried out here, while a comprehensive programme for improving livestock on the island is also in progress.

Agricultural Development On Niue

Since 1954, when a permanent Agricultural Officer was stationed on Niue, steady progress has been made in the development of agriculture on the island. Despite major setbacks caused by two hurricanes, growers have recorded increases in crop production of up to 400%, while worn-out land is being rehabilitated, livestock improved by the introduction of imported strains, and an introduction and demonstration farm established.

By F. J. van WESTENDORP*

IT was not until 1954 that a permanent agricultural officer was stationed at Niue. Until then various officers of the Administration, notably some Resident Commissioners, had done much to improve agriculture on Niue. Especially in regard to exports the results achieved were generally very gratifying.

Visits by agricultural experts were a great help but, as a rule, did not leave a permanent mark because they were brief and without "follow-up".

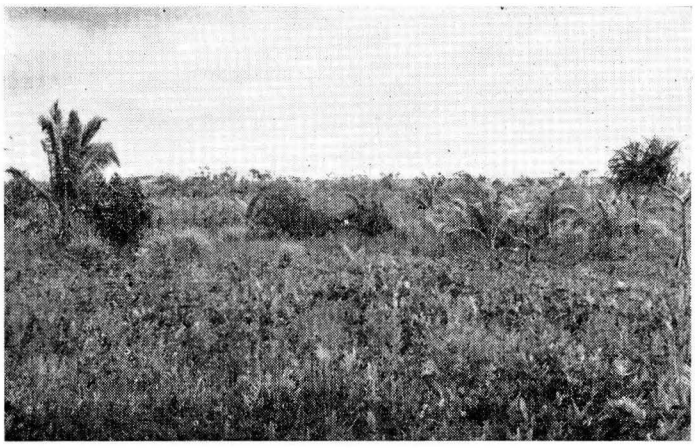
The Niuean is used to hard work because of the nature of his land, and without doubt he has found the best possible way of making use of it, considering his lack of knowledge of modern techniques. Now, with education improved so much over the last ten years or so and a well-established Agriculture Department to show what can be done if up-to-date methods are employed, he is beginning to realize how much more his land can give him, if used properly.

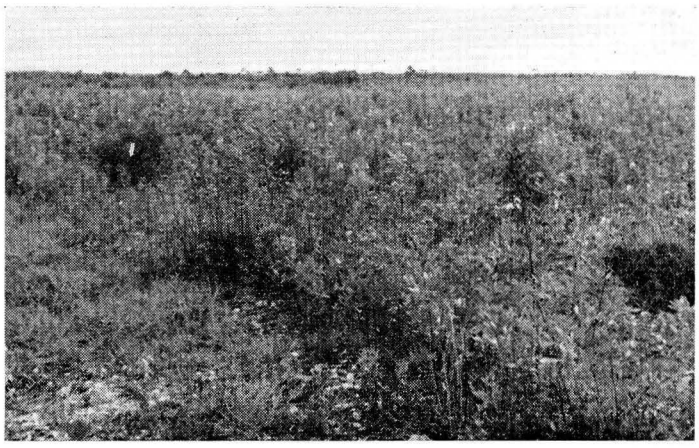
A large part of the island is very rocky, and in many places planting can be done only in soil pockets between coral outcrops. Bananas seem to favour this kind of land, which also in certain parts is covered with heavy forest.

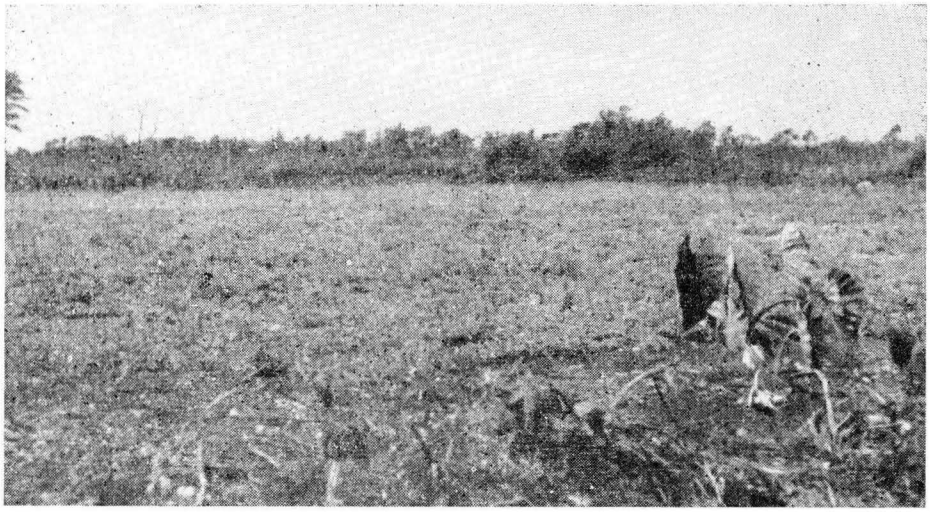
Of a total area of 64,900 acres (just over 100 sq. miles), there are approxi-

* Agricultural Officer, Niue Island.

Below: Part of the "Niue desert", an area of 8,100 acres which because of wrong use in the past, including frequent burning off, became valueless for agricultural purposes. Right: Section of "Niue desert" being brought back into production. A second green manure crop is being grown, after discing and topdressing.







Part of a Niuean farm which after it was disced, topdressed, and planted under the Department's guidance, gave a 400 per cent increase in production.

mately 8,000 acres of light and heavy forest; 48,000 acres largely very rocky, with soil pockets used under a system of shifting cultivation, and about 8,100 acres which are called "Niuean desert", mainly covered with fern. There are far fewer coral outcrops on this land but because it was wrongly used in the past it became valueless for agriculture. This "desert" area can, however, be brought back into production, and a start was made to do this in 1959.

Agricultural Officer Appointed In 1954

The Agricultural Officer arrived in February 1954. At first his task appeared a difficult one. The Niuean naturally took the view that an outsider and newcomer could not possibly tell him—experienced planter that he was—how to improve his agriculture.

The struggle against this prejudice was long and hard, and it took years to break down. There is little doubt that the great number of evening village meetings, held for several years, did much to overcome this attitude. Especially when demonstrations could be given, more and more people were won over, until today so many requests are received for assistance that an increase in the staff of the Department has become necessary.

No doubt an important factor was that through the co-operation of the Education Officer, agriculture was included in the curriculum of all schools. At first the Agricultural Officer himself gave lessons and lectures, but today teachers have been trained sufficiently in this subject to give the lessons themselves with the help of assignments prepared by the Agricultural Officer. It is obvious that lasting changes for the better can only be made if the new generation is educated in this most important subject.

Until December 1958 the Agricultural Officer was the only trained agriculturist in the island. On that date an assistant Agricultural Officer with a diploma in horticulture from Massey Agricultural College was appointed.

As well, a local boy who has received secondary education in New Zealand and had been employed by the Agriculture Department for some years, has just completed a two-year course at Massey College. Another has completed a six months' forestry course in New Zealand, while two boys have just finished their three-year course at Avele Agricultural College in Samoa. The rest of the staff is locally trained.

In general, the island suffered badly because of a drought in 1957-58 and two hurricanes in February 1959 and January 1960.

Three times in succession the work of the Department was either ruined or put back, and most field and experimental work is now three years behind. In spite of all bad luck and disappointments, however, good progress has been made.

Exports suffered badly. Towards the end of the drought, planting material for kumaras and bananas, and also for subsistence crops such as taros, was scarce. Recovery was barely on the way when the first hurricane struck. Again, recovery had barely started when the second hurricane occurred.

At present kumaras are the only important export product. However, bananas are again building up, while copra will be produced in June.

The picture of the export crops is as follows:

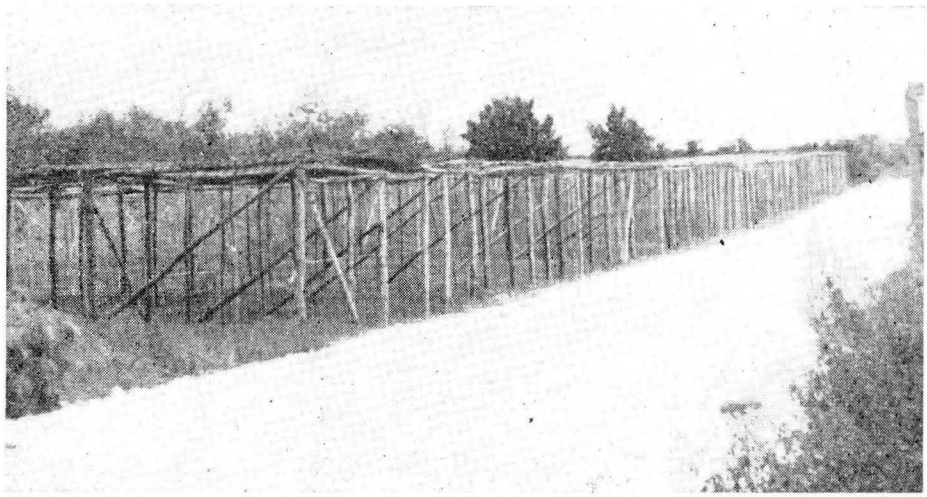
	1955	*1956*	*1957*	*1958*	*1959*
Copra (tons)	952	831	740	715	123
Bananas (cases)	4983	4070	6124	988	239
Kumaras (bags)	16	190	1377	6528	8910

The 1960 figures will cover only kumaras, very few bananas, and no copra. An increase in banana exports is expected in 1961, since much effort has been put into replanting.

The first fertilizer trials showed great promise, and they have been continued despite setbacks.

Excellent results are being achieved by growers who have been working under guidance of the Agriculture Department. Increases of up to 400% per acre have been recorded in the production of kumaras following discing, top dressing, and use of proper planting methods.

Much land can be treated this way, and there is no doubt that Niue can produce much more than hitherto. This is not only because of the remarkable increase in production per acre, but also because permanent occupation of the



Forest nursery established at Falehavaiki.

land makes available so much more land for agriculture than the system of shifting cultivation which is generally practised, and which means that land is used only once in every five to twelve years.

Certain taro trials showed a striking increase in taro weight. In the control plots, taro weight varied from 8 to 13 ounces. In the treated plots maximum taro weight was 25 ounces. This trial was conducted on very poor soil, without tillage of the land. Other trials are in progress.

Banana trials have never reached finality, plots being destroyed several times in succession by hurricanes. New trials are now in progress, and indications are that results will be good.

Because of the achievements of some growers and of experiments on the farm, many people have approached the Department for assistance in developing their land. An extensive programme has been prepared for this season.

Rehabilitation Of "Desert Area"

A special project has been launched to develop the so-called "desert area"—8,100 acres of worn-out land. A large part which cannot be cultivated because it is too rocky will be planted with forest trees. The remainder will be developed for agricultural purposes, mainly by discing, top dressing, growing of green manure crops, etc. As an experiment, ten acres were successfully rehabilitated in 1959, and a larger area in 1960. This project will restore to full use a considerable acreage of land which until recently was considered valueless.

Experimental Farm And Forest Nurseries

An experimental and demonstration farm is established at Vaipapahi. New introductions are tried out here. To improve poultry on the island, a cross between the local fowls and Rhode Island Reds is bred on the farm for distribution, as are ducks. Good boars will be stationed there for serving local sows, while also bred for distribution are goats and donkeys, the latter for use as pack animals.

Forest nurseries at Falehavaiki will supply seedlings of newly-introduced timber and ornamental trees. Here also the hurricanes have done much damage and ruined new seedlings. Local trees lost most of their seeds before maturity two years in succession, much delaying the forestry programme, which uses local varieties of excellent timber trees.

First Agricultural Show

The first island-wide Agricultural Show was held in Niue on September 29 last. It was most successful, attracting much attention, and it is hoped that this will become a yearly event.

Generally it can be said that, agriculturally, the future for Niue is hopeful. Once that more land has been developed, production increased, and new crops established, it will be found that Niue does not need to be a "poor" island as it has been described in the past.

The possibilities are there, but it means a lot of hard work to realize them. It is a good thing that the Niuean is a hard worker by nature.

PICTURE CREDITS

Acknowledgement is made for illustrations reproduced in this issue as follows: Front cover photo, pages 25, 26 (top), 27, 30, 32, 33, 35, 37, Australian Official; 20, 21, Ronald Powell; 23, 24 (top), M. Cohic, French Institute of Oceania; 24 (bottom), Department of Agriculture, French Polynesia; 26 (bottom), 36, 40, 60, Fiji Official; 53, 54, Netherlands New Guinea Official; 55, 56, 57, 58, E. Schubert; 67, 68, F. J. van Westendorp.

PACIFIC READING

Material in this section is contributed by the South Pacific Commission Literature Bureau. Any enquiries relating thereto should be directed to Box 5254, G.P.O., Sydney, Australia.

Twelve Things To Do With Rice. Attractively produced in two colours, this 24-page booklet describes twelve different ways of preparing rice to provide more variety in meals.

The recipes are grouped into two sections; the first, entitled "Five Easy Ways to Cook Rice", deals with: Boiled Rice; Steamed Rice; Rice with Coconut Cream; Rice with Condensed Milk; and Rice with Fish. The second section—"Seven Harder Ways to Cook Rice"—describes the preparation of dishes that require more ingredients and take longer time to prepare than those in Part 1. These are: Fried Rice; Rice with Lemon; Rice with Curry; Rice with Tomatoes; Rice, Fish and Tomatoes; Rice with Crab; and Rice with Pork. Each recipe includes a list of ingredients and details the correct method of preparation; for those unfamiliar with measuring terms, a measuring guide showing the relative sizes of a cup, a teaspoon, a tablespoon and a condensed milk tin is printed on the inside covers.

A useful feature of the book is the inclusion of blank pages so that users can write in their own or other recipes.

Written in simple English and illustrated with line drawings, this book should have particular appeal to members of Women's Clubs and others interested in providing less humdrum meals. The cover and two typical pages from the book are reproduced on p. 72. Copies are available from the Literature Bureau, Box 5254, G.P.O., Sydney, N.S.W., Australia, price A.1/- plus postage.

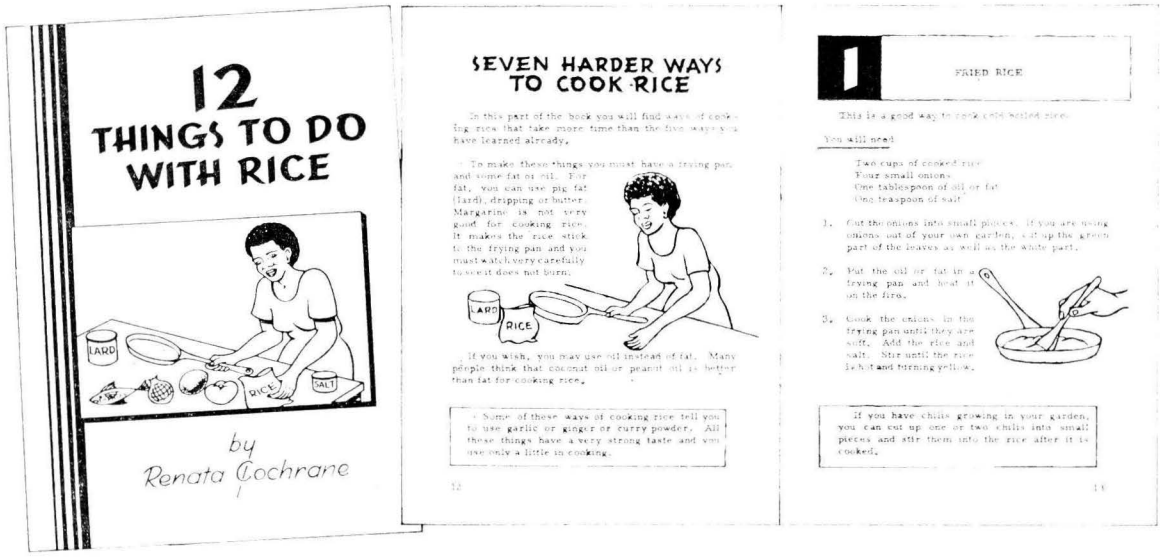
New Hebrides Reader. A small reader in the Ngunese (New Hebrides) language is now in the course of preparation by this Bureau on behalf of the Presbyterian Church of the New Hebrides. This book will contain 40 pages and in order to keep costs to a minimum the text is being typed direct on to duplimats, using a modern electric typewriter, and then printed by a small offset machine.

Specimen pages of this book, with details of production, can be obtained from the Literature Bureau, Box 5254, G.P.O., Sydney.

New 'Bonito' Titles. Two new titles in the Bonito series of supplementary readers are being published by Longmans, Green and should be available in the near future.

One, *The Pitcairn Island Story*, written by Mr. E. Schubert, a former education officer on Pitcairn, tells the story of the inhabitants of this lonely island from the arrival of the "Bounty" mutineers to the present day. This book differs from previous Bonitos in that it is slightly longer—36 pages, and includes a four-page insert of photographs. The other—*The Brave Story of Philip Carteret*—relates the courage and endurance of Carteret's voyage to the Pacific.

These books should prove useful as supplementary readers at about 4th-6th year level of English, and the subject matter is equally suited for either school or adult reading.

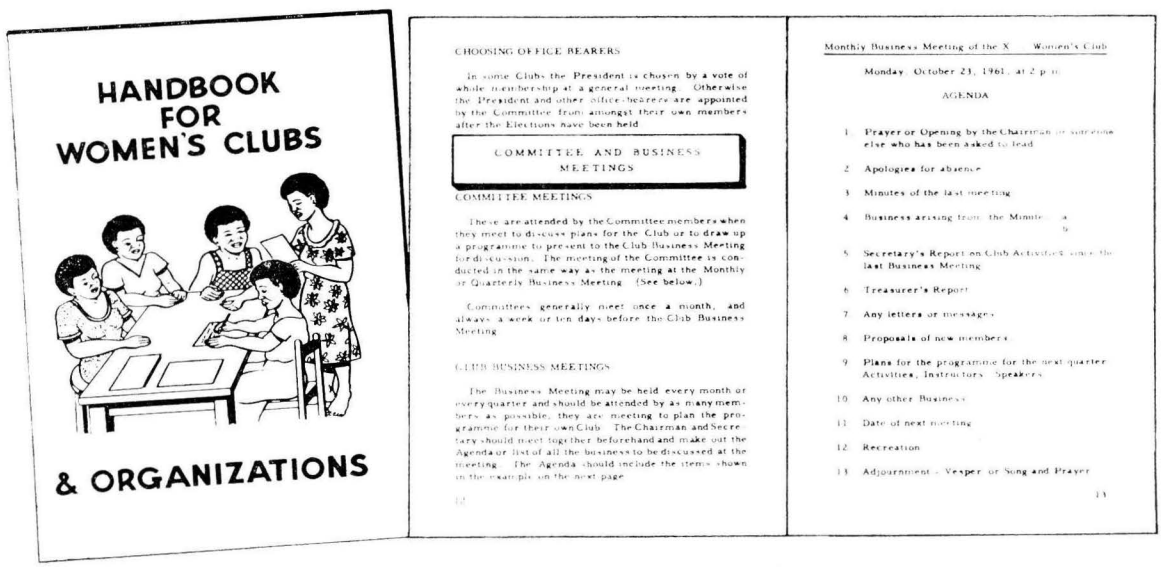


Cover and pages from "Twelve Things To Do With Rice".

Women's Club Handbook. The Commission's Women's Interests Officer, Miss M. E. T. Stewart, has just prepared a small handbook for the guidance of club leaders and others engaged in Women's Club work.

Entitled *Handbook for Women's Clubs and Organizations,* this 18-page book discusses clearly and concisely such topics as: The Club Programme (planning meetings, talks and other activities); Office-Bearers (president, secretary, treasurer, activity leaders, and the committee, and their duties to the Club); Elections (nomination of members, method of voting, and choosing office-bearers); and Committee and Business Meetings. The final chapter explains the meaning of club membership in the form of a series of questions and answers and is intended to be read aloud from time to time to club members.

Copies of this book can be obtained from the Literature Bureau, price A.1/- per copy plus postage.



Cover and pages from the "Handbook For Women's Clubs And Organizations" prepared by the Commission's women's interests officer, Miss Marjorie Stewart.

Training Village Midwives

(Continued from page 54)

lines. Last year two courses were organized in the Hollandia district, and a preliminary assessment suggests that these have been equally successful.

Since there are nurse aides already working in this area, we tried to ensure that the trained girls and the old village midwives regard each other as colleagues rather than as rivals. Already in some of the villages near Hollandia they are working happily side by side. They often attend deliveries together, and sometimes the old midwives come to lend a hand at the clinics organized by our Maternal and Child Welfare Service.

Although it is too early to say how the scheme will eventually succeed, I feel it can confidently be said that the native midwife, if her help and co-operation can be gained, and if she can be given a little instruction in keeping with her abilities, will play an important role in improving the health of mothers and children in New Guinea.

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